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PATENTS

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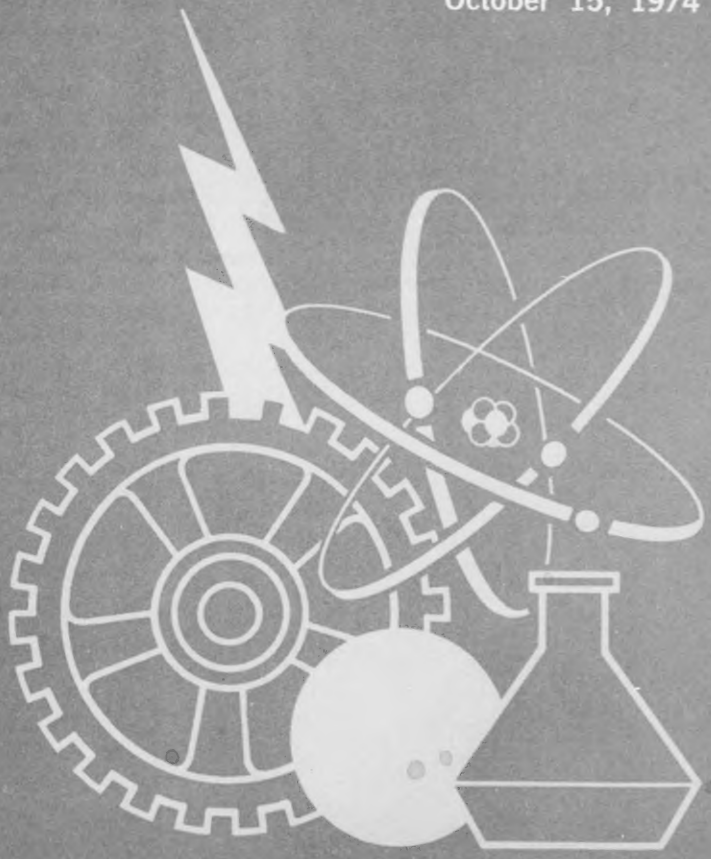

U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 15, 1974 Volume 927 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Trademark Registration Treaty Post Conference Information	778
Patent Suits	778
Access to Interference Files	779
Patent Notices	
Certificates of Correction for the Week of October 15, 1974	780
Patents Available for Licensing or Sale	780
Dedications	781
Disclaimer and Dedication	781
Disclaimers	781
National Technical Information Service	782
Condition of Patent Applications	784
Reissue Patents Granted (28,196)	785
Plant Patents Granted (3,637)	789
Patents Granted	
General and Mechanical (3,840,899)	790
Chemical (3,841,830)	1097
Electrical (3,842,180)	1186
Design Patents Granted (233,186)	1273
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 46
Classification of	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 55

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PATENT OFFICE NOTICES

Trademark Registration Treaty Post Conference Information

The text of the Trademark Registration Treaty (TRT), signed in 1973 for the United States and 13 other States, was reproduced in the OFFICIAL GAZETTE of July 24, 1973. The substance of post conference documents on the history of the treaty, a brief summary of its provisions and advantages, and explanatory notes on each of the articles, were reproduced in the OFFICIAL GAZETTE of March 12, 1974. In addition, an outline of the possible changes in the "Trademark Act of 1946, As Amended," which may be required or desirable if the Trademark Registration Treaty is ratified and implemented was published in the OFFICIAL GAZETTE of May 28, 1974.

The World Intellectual Property Organization (WIPO), which served as the Secretariat of the Vienna Diplomatic Conference at which the Trademark Registration Treaty was adopted, has now circulated an additional post conference document, consisting of explanatory notes on the regulations under the treaty. These notes are intended to facilitate the reading of the text of the regulations, providing, where a rule refers to certain articles of the treaty or to other rules of the regulations, brief information on those articles or other rules. This document is supplemental, and similar in format, to the one comprising notes on the articles which was published on March 12, 1974.

The Office will supply a photo copy of these explanatory notes on the TRT regulations (TRT/PCD/4, dated July 31, 1974) to any interested person who may request such copy.

C. MARSHALL DANN,
Dated: Sept 17, 1974. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,704,663, D. R. Blake, LEVELING DEVICE, **filed** Jan. 3, 1974, D.C., S.D.N.Y., Doc. 74–C–71, *David R. Blake* v. *Robert E. Miller & Co. Inc. and Robert E. Miller.*

2,706,697, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS, **filed** in the Court of Claims (District of Columbia), Doc. 127–62, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Inc.* v. *The United States.* Plaintiffs held estopped from contesting invalidity of all claims on said patent. All claims held invalid, Oct. 17, 1973.

2,733,713, H. H. Kabnick, ORAL IRRIGATOR, **filed** in the U.S. Court of Claims (District of Columbia), Doc. 55–73, *Interdent Corporation* v. *The United States.* Defendant's motion for partial summary judgment regarding sales of Defense Department Post Exchanges granted since Court has no jurisdiction over non-appropriated fund activities of the Federal government, Dec. 19, 1973.

2,883,895, C. A. Vossberg, ROLLING MILL THICKNESS CONTROL SYSTEM, **filed** Mar. 25, 1974, D.C., W.D. Tenn. (Memphis), Doc. C–74–30–E, *Carl A. Vossberg* v. *Consolidated Aluminum Corporation.*

2,919,990, Podlesak, Kraft, Miller, METHOD OF CONTINUOUSLY PRODUCING PACKAGED UNITS, **filed** Feb. 8, 1974, D.C. Utah (Salt Lake City), Doc. NC–74–10, *Kraftco Corporation* v. *Cache Valley Dairy Association.*

3,002,176, R. S. Yopp, MULTIPLE-CONTACT ELECTRICAL CONNECTOR, **filed** Feb. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c316, *Bunker Ramo Corp.* v. *AMP Inc. et al.*

3,017,616, R. A. Runyan, SYSTEM FOR PROCESSING RECORDED INFORMATION, **filed** Dec. 21, 1973, U.S. Court of Claims (District of Columbia), Doc. 488–73, *Weston Instruments, Inc.* v. *The United States of America.*

3,046,110, M. P. Schmidt, PROCESS OF MAKING PRINTING PLATES AND LIGHT SENSITIVE MATERIAL SUITABLE FOR USE THEREIN, **filed** July 12, 1966, D.C. Del. (Wilmington), Doc. CA 3235, *Azoplate Corporation* v. *Silverlith, Inc.* Judgment—Patent valid, defendant restrained and enjoined from infringing any claim of said patent, judgment entered against defendant, Jan. 4, 1974.

3,100,080, R. A. Fiechter, RAILWAY RAIL JOINT; **3,139,364,** same, RAILWAY TRACK, **filed** July 6, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–558, *Allegheny Dropforge Co.* v. *Portec, Inc.* Patents invalid, Mar. 28, 1974.

3,139,364. (See 3,100,080.)

3,140,342, Ehrreich and Avery, ELECTRICAL SHIELDING AND SEALING GASKET, **filed** May 13, 1970, D.C.N.J. (Newark), Doc. C–606–70, *Technical Wire Products, Inc.* v. *Chomerics, Inc.* Stipulation of dismissal of action, Mar. 22, 1974.

3,336,546, V. E. De Lucia, VACUUM RELAY FOR RADIO FREQUENCY SIGNALS; **3,604,870,** same, MAGNETICALLY OPERATED ENVELOPE ENCLOSED HIGH VOLTAGE RELAY; **3,604,970,** Culbertson, McRae and Meyn, NONELECTRON EMISSIVE ELECTRODE STRUCTURE UTILIZING ION-PLATED NONEMISSIVE COATINGS, **filed** Nov. 30, 1973, D.C., N.D. Calif. (Los Angeles), Doc. C73–2144–AJZ, *Torr Laboratories, Inc.* v. *Jennings Radio Manufacturing Corp.* Filed consent judgment and order that claims 1, 2 and 3 of plaintiff's U.S. Patent 3,604,870 are invalid under 35 USC 102(a), 102(b) and 103. Plaintiff's complaint for infringment of claims 4, 5, 6 and 7 are dismissed with prejudice. Plaintiff's complaint for infringment of claims 1–4 of U.S. Patent 3,336,546 are dismissed with prejudice, defendant's counterclaim is dismissed without prejudice, entered Mar. 21, 1974.

3,360,157, Bolt and Wobbe, METHOD OF FORMING A COATED METAL CONTAINER AND ARTICLE PRODUCED THEREBY, **filed** Nov. 5, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73–2515, *Crown Cork & Seal Company, Inc.* v. *American Can Company.*

3,393,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, **filed** Mar. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c527, *Semi-Elements, Inc., Joseph V. Fisher and Laverne B. Fisher* v. *Motorola Semiconductor Products, Inc.* Order cause dismissed without prejudice pursuant to Rule 41(a) of the FRCP, May 25, 1972.

3,604,870. (See 3,336,546.)

3,604,970. (See 3,336,546.)

3,611,910, J. S. Hughes, CORN POPPER; **D. 206,674,** Hughes and Cleminshaw, same, **filed** Jan 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c61, *Robeson Cutlery Co. Inc.* v. *Reliable Mfg. Co. Inc.* Motion to substitute the plaintiff Robeson Cutlery Co. Inc. for Ropat Corporation is granted. By stipulation cause dismissed with prejudice, Jan. 31, 1974.

3,758,051, D. D. Williams, VELOCITY CONTROL AND ORIENTATION OF A SPIN-STABILIZED BODY; **Re. 26,887,** W. B. McLean, PROPORTIONAL NAVIGATION SYSTEM FOR A SPINNING BODY IN FREE SPACE, **filed** Jan. 17, 1974, D.C., M.D. Fla. (Orlando), Doc. 74–21–Orl–C–R, *Hughes Aircraft Co., William B. McLean and Walter G. Finch* v. *Philco-Ford Corp. and The Marconi Co. Ltd.*

3,775,951, Eichholz and McCambridge, VACUUM CLEANER, **filed** Jan. 9, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c64, *Central Quality Industries, Inc.* v. *Shelton Products, Inc. et al.*

3,776,698, A. M. Eisentraut, TEST FOR THYROID HORMONE, **filed** Feb. 19, 1974, D.C., N.D. Tex. (Dallas), Doc. CA 3–74–143–E, *Nuclear-Medical Laboratories* v. *American Biomedical Corporation and Bio-Assay Laboratory.*

Re. 26,887. (See 3,758,051.)

D. 206,674. (See 3,611,910.)

D. 214,083, I. J. Alligood, INDUSTRIAL VACUUM CLEANING UNIT, **filed** Jan. 23, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74–64, *National Systems Inc. and Ira J. Alligood, Jr.* v. *Kwik-N-Eze Mfg., Samuel Bryant, and Giant Towels Co.*

D. 219,118, Baker and Piecia, BOAT, **filed** Feb. 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–343–LTL, *Sidewinder Marine, Inc.* v. *Wriedt, Inc., doing business as Wriedt Custom Boats.* Filed stipulation of dismissal of plaintiff's complaint and defendant's counterclaim without prejudice, entered Dec. 14, 1973.

Access to Interference Files

[37 CFR Part 1]

Notice of Proposed Rulemaking

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.11(a).

Interested persons are invited to present their views, objections, recommendations, or suggestions in writing in connection with the proposed change to the Commissioner of Patents, Washington, D.C. 20231 on or before November 29, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, Arlington, Virginia.

The proposed revision of § 1.11(a) would change present practice by permitting earlier access to the file of an interference which involved a patent or an application on which a patent has issued. Under present practice, access is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The proposed revision would allow access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. Such earlier access could be of benefit to members of the public who need to know the basis for the issuance of the patent prior to final adjudication of the interference decision.

The text of the proposed revised rule is as follows:

§ 1.11 *Files open to the public.*

(a) After a patent has been issued, the specification, drawings, and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be furnished upon paying the fee therefor. After an award of priority by the Board of Patent Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See § 2.27 of this chapter for trademark files.

* * * * *

Dated: Aug. 30, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: Sept. 9, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-21454; Filed 9-16-74; 8:45 am]

Pub. in 39 F.R. 33376, Sept. 17, 1974

Certificates of Correction for the Week of Oct. 15, 1974

Re. 27,970	3,773,906	3,799,207	3,814,741
Re. 28,031	3,774,188	3,799,322	3,814,938
D. 231,740	3,774,245	3,799,563	3,815,184
3,629,275	3,774,400	3,800,037	3,815,740
3,643,701	3,775,463	3,800,064	3,816,174
3,671,468	3,776,516	3,800,265	3,816,213
3,688,359	3,776,528	3,800,935	3,816,275
3,690,934	3,776,617	3,801,044	3,816,337
3,692,824	3,776,863	3,801,217	3,816,490
3,696,198	3,777,113	3,801,321	3,816,566
3,705,206	3,777,288	3,801,429	3,817,251
3,706,733	3,778,689	3,801,576	3,817,446
3,707,596	3,779,741	3,802,139	3,817,741
3,709,915	3,779,985	3,802,367	3,817,868
3,711,517	3,781,186	3,802,948	3,818,151
3,715,367	3,781,358	3,803,109	3,818,162
3,716,430	3,781,813	3,803,144	3,818,485
3,728,293	3,782,214	3,803,392	3,818,711
3,731,613	3,782,530	3,804,501	3,819,384
3,732,307	3,782,826	3,805,073	3,819,527
3,733,412	3,784,080	3,805,596	3,819,697
3,733,967	3,784,560	3,805,942	3,819,817
3,743,385	3,784,922	3,806,449	3,820,078
3,745,179	3,784,977	3,806,531	3,820,197
3,745,408	3,785,430	3,806,546	3,820,317
3,746,663	3,787,270	3,806,644	3,820,420
3,747,241	3,787,622	3,806,658	3,820,531
3,748,238	3,787,769	3,806,880	3,820,580
3,750,236	3,790,365	3,807,052	3,820,612
3,751,392	3,790,619	3,807,158	3,820,958
3,751,715	3,790,834	3,807,537	3,821,718
3,752,589	3,790,958	3,807,857	3,821,768
3,755,518	3,792,233	3,808,340	3,821,775
3,756,702	3,792,293	3,808,635	3,821,840
3,759,264	3,793,290	3,808,681	3,821,875
3,759,628	3,793,440	3,808,703	3,822,002
3,760,043	3,793,736	3,808,874	3,822,132
3,760,077	3,793,824	3,808,896	3,822,230
3,761,552	3,793,854	3,810,856	3,822,352
3,761,565	3,793,906	3,811,661	3,822,436
3,762,692	3,794,550	3,812,114	3,822,565
3,763,285	3,795,117	3,812,179	3,823,158
3,763,533	3,795,508	3,812,467	3,823,444
3,763,983	3,795,530	3,812,728	3,824,133
3,765,321	3,795,584	3,813,245	3,824,391
3,765,933	3,796,707	3,813,440	3,824,415
3,766,199	3,796,843	3,813,453	3,824,547
3,767,543	3,796,908	3,813,638	3,824,551
3,769,414	3,796,936	3,813,755	3,824,972
3,769,982	3,796,995	3,813,806	3,825,549
3,770,032	3,797,496	3,813,837	3,825,566
3,770,435	3,797,535	3,814,185	3,825,857
3,772,287	3,797,609	3,814,388	3,825,970
3,773,155	3,798,246	3,814,470	3,826,940
3,773,352	3,798,548	3,814,546	3,826,941
3,773,547	3,798,611	3,814,551	3,833,899

Patents Available for Licensing or Sale

D. 232,048. MILK CAN PLANTER. William A. Bamesberger, P.O. Box 1442, Auburn, Calif., 95103.

2,970,783. COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE. A. H. Plyer, 55 E. Monroe, Chicago, Ill., 60603.

3,442,146. INTERMITTENT ROTARY MOTION. Theodore Simpson, 3406 Carns Ave., Orlando, Fla., 32806.

3,596,757. MONEY CLIP. Patrick T. Cocchiaraley, 350 Wayland Road, Cherry Hill, N.J., 08034.

3,669,474. COUPLED JOINT OF AXIALLY ALIGNED ELONGATED MEMBERS. Richard M. Bode, 7403 5th Ave., Kenosha, Wis., 53140.

3,674,282. PNEUMATIC STABILIZING SYSTEM FOR VEHICLES. W. G. Fasse, 2556 Legion St., Bellmore, N.Y., 11710.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,740,848. ROTARY CUTTER ASSEMBLY. John M. Lindley, P.O. Box 1464, Oakland, Calif.

3,760,963. LIFTING ATTACHMENT FOR A CRANE. Forrest D. Welch. Correspondence to: Ronald P. Kananen, 1828 L St. NW., Washington, D.C., 20036.

3,791,734. MICROFILM CAMERA AND LIGHT SOURCE THEREFOR. Walter Leemann. Correspondence to: Balogh, Osann, Kramer, Dvorak, Genova & Traub, 53 W. Jackson Blvd., Chicago, Ill., 60604.

3,804,561. HYDRAULIC CONVEYING APPARATUS. Hermann Kramer, Freiburg, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,806,733. WIND OPERATED POWER GENERATING APPARATUS. Martin I. Haanen. Correspondence to: Reif and Gregory, 2005 Dain Tower, Minneapolis, Minn., 55402.

3,811,461. DUAL ACTION TRIGGERING VALVE DEVICE FOR INFLATABLE EQUIPMENT. Joseph F. Novak, 609 State St., Calumet City, Ill., 60409.

3,815,178. COTTON LINTER REFINING PROCESS AND APPARATUS. Jules E. Goldberg, United Merchants and Manufacturers, Inc., 1407 Broadway, New York, N.Y., 10018.

3,819,188. SECTIONED SHELL PUZZLES. Gerald A. Freedman, P.O. Box 503, Federal Station, Worcester, Mass., 01601.

3,824,693. NAVIGATIONAL DEVICE. Kenneth F. Cherry, 1533 Eastgate, Toledo, Ohio, 43614.

3,824,803. APPARATUS FOR REFRIGERATION SYSTEMS. Thomas C. Wright, et al., 8476 W. 103rd Terrace, Chicago, Ill., 60620.

3,839,978. YACHT KIT. William H. Hendrickson, Route 2, Box 17-A, Mancos, Colo., 81328.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 2 patents.

Applications for licenses may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,823,406. METHODS, APPARATUS AND MEDIA FOR MAGNETICALLY RECORDING INFORMATION.

3,824,601. MULTICOLORED MAGNETIC IMAGE RECORDING AND MEDIA.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 30 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,822,155. MEHTOD OF MAKING A SEMITRANSPARENT PHOTOMASK.

3,822,453. METHOD OF MAKING CATHODE RAY TUBE INTERNAL SHIELDS.

3,823,264. CASCADE VIDEO OUTPUT FEEDBACK AMPLIFIER.

3,823,332. MOS FET REFERENCE COLTAGE SUPPLY.

3,823,379. TELEVISION AUTOMATIC GAIN CONTROL CIRCUITRY PROVIDING FOR COMPATIBLE CONTROL OF VHF TUNER AND UHF TUNER.

3,823,409. ROTATABLE PARABOLOIDAL RESERVOIR USEFUL IN AN INK JET PRINTER.

3,823,469. HIGH HEAT DISSIPATION SOLDER-REFLOW FLIP CHIP TRANSISTOR.

3,823,896. RECORDING WEB TENSION CONTROL.

3,824,082. PROCESS FOR PREPARING SUPER-CONDUCTING NIOBIUM-GALLIUM ALLOY.

3,824,089. METHOD OF ALIGNING A TWO-CAPILLARY TUBE GAS DISCHARGE DEVICE.

3,824,342. OMNIDIRECTIONAL SOUND FIELD REPRODUCING SYSTEM.

3,824,411. PULSE DELAY CIRCUIT.

3,824,450. POWER SUPPLY KEEP ALIVE SYSTEM.

3,824,507. PARITY OF TUNING APPARATUS.

3,825,816. APPARATUS FOR PROVIDING AN OPTICAL SYSTEM USING ADAPTIVE HOLOGRAPHIC COMPONENTS.

3,825,428. UNSATURATED POLYESTER RESIN PHOTORESIST COMPOSITION.

3,825,449. METHOD OF DEPOSITING EPITAXIAL LAYERS ON A SUBSTRATE FROM THE LIQUID PHASE.

3,825,682. BALANCED LINE DRIVER, LINE RECEIVER SYSTEM.

3,825,770. MULTI-FUNCTION LOGIC GATE.

3,825,778. TEMPERATURE-SENSITIVE CONTROL CIRCUIT.

3,825,793. RASTER CORRECTION CIRCUIT UTILIZING A PARABOLICALLY VARYING LOAD CIRCUIT.

3,825,805. TRANSISTOR CARRIER FOR MICROWAVE STRIPLINE CIRCUIT.

3,825,836. DELAYED ALARM AND DROWSE FOR CLOCK RECEIVERS.

3,825,949. CARTRIDGE CHANGER WITH CARTRIDGE SENSING MEANS.

3,825,994. METHOD OF SOLDERING CIRCUIT COMPONENTS TO A SUBSTRATE.

3,826,047. DEVICE FOR MOUNTING AND ORIENTING A WORKPIECE.

3,826,634. PLUG SEALING OR HERMETIC ENCLOSURES.

3,826,877. INFORMATION PLAYBACK SYSTEM STYLUS.

3,827,051. ADJUSTABLE POLARIZATION ANTENNA SYSTEM.

3,827,055. LENS FED ANTENNA ARRAY SYSTEM.

General Electric Company is prepared to grant non-exclusive licenses under the following 17 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 2 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,462,572. VACUUM TYPE CIRCUIT INTERRUPTER HAVING CONTACTS PROVIDED WITH IMPROVED ARC PROPELLING MEANS.

3,801,899. MEANS FOR DETECTING THE INCEPTION OF CORONA DISCHARGES WITHIN INDUCTION APPARATUS.

Applications for licenses under the following patent may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,814,899. OVERTEMPERATURE CONTROL SYSTEM.

Applications for licenses under the following 14 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

3,732,462. BALLAST APPARATUS FOR OPERATING A PAIR OF DISCHARGE LAMPS.

3,737,823. INTEGRAL ELECTRICAL COIL.

3,745,499. VOLTAGE STABILIZING TRANSFORMER.

3,760,314. TRANSFORMER WITH IMPROVED ARRANGEMENT FOR PROVIDING A GROUNDING CONNECTION.

3,760,316. TRANSFORMER COIL ASSEMBLY.

3,727,563. INCINERATOR.

3,757,686. INCINERATOR.

3,757,707. INCINERATOR.

3,766,794. SHAFT ROTATION REVERSING DEVICE.

3,772,585. CAPACITY COMPENSATION AND DISCRIMINATION CIRCUITS FOR HIGH VOLTAGE POWER SUPPLY.

3,777,677. INCINERATOR.

3,780,342. BALLAST APPARATUS FOR STARTING AND OPERATING ARC LAMPS.

3,801,867. DIRECT CURRENT ENERGIZATION OF GASEOUS DISCHARGE LAMPS.

3,804,249. AIR DRUM SORTER FOR SOLID WASTE.

Dedications

3,542,043.—*Richard L. Every,* Ponca City, Okla. METHOD FOR TRANSPORTING TWO IMMISCIBLE FLUIDS BY PIPELINE. Patent dated Nov. 24, 1970. Dedication filed Feb. 14, 1974, by the assignee, *Continental Oil Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,723,784.—*Juris Sulcs,* Fairview Park, and *Robert W. McKimm,* Euclid, Ohio. ALUMINA CERAMIC LAMP HAVING HEAT-REFLECTING SHIELDS SURROUNDING ITS ELECTRODES. Patent dated Mar. 27, 1973. Dedication filed Mar. 11, 1974, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

3,769,502.—*John R. Schultz, John W. Heidacher, John M. Sharer,* and *James S. Adams,* all of Batesville, Ind., and *Frank M. Damico,* Plover, Wis. Patent dated Oct. 30, 1973. Disclaimer and dedication filed June 14, 1974, by the assignee, *Hill-Rom Company, Inc.*

Hereby disclaims and dedicates claims 5, 11, 19, 20, 21, 24, 28 and 29 of said patent.

Disclaimers

3,274,316.—*Paul A. Songer,* Denver, Colo. METHOD OF MAKING REINFORCED CORRUGATED HOSE. Patent dated Sept. 20, 1966. Disclaimer filed June 10, 1974, by the assignee, *The Gates Rubber Company.*

Hereby disclaims all of the remaining portion of the term of the patent subsequent to June 4, 1974.

3,441,536.—*Chi K. Dien,* Buffalo, N.Y. SYNTHETIC RESIN COMPOSITIONS CONTAINING ALPHA-PHENYLTHIO-ANTHRAQUINONES AS COLORANTS. Patent dated Apr. 29, 1969. Disclaimer filed Jan. 28, 1974, by the assignee, *Allied Chemical Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 7 and 8 of said patent.

3,511,233.—*Elbert Holy, Jr.,* Atlanta, Ga. FOOT PROTECTOR. Patent dated May 12, 1970. Disclaimer filed Mar. 13, 1972, by the inventor.

Hereby enters this disclaimer to claims 1, 2 and 4 of said patent.

3,511,661.—*Frederick J. Rauner,* and *Roubin D. Deerhake,* Rochester, N.Y. LITHOGRAPHIC PRINTING PLATE. Patent dated May 12, 1970. Disclaimer filed Apr. 1, 1974, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to all claims of said patent.

3,543,315. *William L. Hoffman,* Pacific Palisades, Calif. SOFT BOARD FABRICATION. Patent dated Dec. 1, 1970. Disclaimer filed Jan. 21, 1974, by the inventor.

Hereby enters this disclaimer to all claims of said patent.

3,566,115.—*Ann Swain* and *Robert Sheldon,* Abingdon, and *Geoffrey Brian Stapleton,* East Hanney, England. RADIATION DOSIMETER COMPRISING A GAS EVOLVING MATERIAL. Patent dated Feb. 23, 1971. Disclaimer filed Feb. 28, 1974, by the assignee, *Science Research Council.*

Hereby enters this disclaimer to claim 1 of said patent.

3,677,659.—*John G. Williams,* Warren Township, Somerset County, N.J. MULTI-STAGE PUMP AND COMPONENTS THEREFOR. Patent dated July 18, 1972. Disclaimer filed Feb. 27, 1974, by the assignee, *Worthington Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 7 and 8 of said patent.

3,726,421.—*Alois Goldhofer,* Amendingen, Germany. LOADING AND UNLOADING DEVICE. Patent dated Apr. 10, 1973. Disclaimer filed June 3, 1974, by the inventor.

Hereby enter this disclaimer to claim 25 of said patent.

3,746,274.—*Elmer Chen-Shen Yang,* Anaheim, Calif. STOP SENSITIVE RETRACTOR. Patent dated July 17, 1973. Disclaimer filed Mar. 8, 1974, by the assignee, *Pacific Scientific Company.*

Hereby enters this disclaimer to claims 1, 2, 7, 8, 25, 27, 28 and 29 of said patent.

3,750,051.—*Douglas MacPherson Brady*, Middletown, N.J. MULTI-LEVEL MODULATOR FOR COHERENT PHASE-SHIFT KEYED SIGNAL GENERATION. Patent dated July 31, 1973. Disclaimer filed Feb. 28, 1974, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1–14 of said patent.

3,757,626.—*Jack H. Kulp*, San Juan Capistrano, Calif. DEVICE FOR STORING AND DISPENSING RIBBON-LIKE MATERIALS AND THE LIKE. Patent dated Sept. 11, 1973. Disclaimer filed Apr. 4, 1974, by the assignee, *Royal Industries, Inc.*

Hereby enters this disclaimer to claims 8, 9, 10, 11 and 12 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent 3,766,639. Method for Testing Electronic Circuits Using Variable Liquid Dielectric Constant Testing Media. Filed Jan. 20, 1972. Patented Oct. 23, 1973. Not available NTIS.

Patent 3,769,608. Ultra High Frequency Mechanical Q-Switch. Filed May 17, 1972. Patented Oct. 30, 1973. Not available NTIS.

Patent 3,769,672. Method of Making an Improved Teflon-Lined Spherical Bearing. Filed July 31, 1972. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,770,227. Jet Wing With Multiple Thrust Augmentors. Filed Sept. 10, 1971. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,770,488. Metal Impregnated Graphite Fibers and Method of Making Same. Filed Apr. 6, 1971. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,770,503. Two Compartmented Electrochemical Cell Having Aluminum Anode Bud Powdered Carbon Suspended in the Cathode Compartment. Filed Mar. 6, 1972. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,774,280. Method of Fabricating Hollow Balls for Use in Rolling Contact Bearing Applications. Filed July 18, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,774,291. Explosive Bonding of Tubes to Fittings. Filed Aug. 4, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,774,405. Magnetically Driven Cryogen Vuilleumier Refrigerator. Filed Sept. 9, 1971. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,774,867. Acoustic Wing Stall Delaying Device. Filed June 27, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,119. Photomechanical Method of Producing Grounded Printed Circuits. Filed Dec. 14, 1971. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,453. Preparation of Hexafluoroisopropoxides of Aluminum and Group IV Elements. Filed Mar. 14, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,763. Apparatus for Indicating the Impending Failure of a Jet Engine. Filed Mar. 7, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,778,267. Photographic Developer. Filed Oct. 14, 1971. Patented Dec. 11, 1973. Not available NTIC.

Patent 3,778,405. Process for Preparing a Polyphenylene Lacquer and Laminates Fabricated Therewith. Filed Dec. 30, 1971. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,765,025. Time Differentiating Passive Impulse Gage. Filed Dec. 11, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,769,797. By-Pass Engine Having a Single Thrust Diverter Valve Mechanism for a V/Stol Aircraft. Filed Oct. 28, 1971. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,772,520. Method for the Investigation of Thin Films on a Semiconductor Substrate in a Scanning Electron Microscope. Filed Mar. 21, 1972. Patented Nov. 13, 1973. Not available NTIS.

Patent 3,774,291. Explosive Bonding of Tubes to Fittings. Filed Aug. 4, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,690. Radio Frequency Store and Display System. Filed July 6, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,762. Gas Multiplication Ultraviolet Detector System for Fire Detection. Filed Sept. 15, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,780,533. Composite Wall for a Regeneratively Cooled Thrust Chamber of a Liquid Propellant Rocket Engine. Filed May 17, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,780,784. Expandable Tire Retainer Assembly. Filed June 7, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,780,952. Tension Brazed Face Injector. Filed May 17, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,094. Liquid Cooled Mirror Structure. Filed Sept. 15, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,784,517. Preparation of a Polybenzimidazoles in the Presence of a Sulfone Solvent. Filed June 27, 1972. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,785,405. Aerodynamic Nozzles in Rectangular Duct. Filed Feb. 23, 1972. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,785,593. Aircraft Propulsion System. Filed Sept. 10, 1971. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,787,781. External Cathode/Internal Anode Figure Eight Laser. Filed Aug. 7, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,791,158. Cryosorption Pumping With Frost Sorbents. Filed Aug. 23, 1972. Patented Feb. 12, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Patent Management Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,131,137. Method for Conducting an Electro-Chemical Oxidation. Apr. 28, 1964. Not available NTIS.

Patent 3,225,012. Carbohydrate Derived Polyamides. Dec. 21, 1965. Not available NTIS.

Patent 3,301,768. Process for Obtaining Amyloglucosidase. Jan. 31, 1967. Not available NTIS.

Patent 3,308,038. Process of Making Spore-Containing Cultures of Japanese Beetle Milky Disease Bacteria. Mar. 7, 1967. Not available NTIS.

Patent 3,312,341. Flotation Separation of Dry Milled Cereal Grain Components. Apr. 4, 1967. Not available NTIS.

Patent 3,332,847. Almarcetin and Its Production by Streptomyces Albus. July 25, 1967. Not available NTIS.

Patent 3,352,762. Disinfectant-Containing Stopper for Prolonged Aerobic Fermentations. Nov. 14, 1967. Not available NTIS.

Patent 3,377,302. Saponified Starch Acrylate Grafts. Apr. 9, 1968. Not available NTIS.

Patent 3,414,530. Graft Polymers of Polyalkylene Oxides on Starch and Dextrin. Dec. 3, 1968. Not available NTIS.

Patent 3,480,572. Starch Resin Reinforced Rubbers. Nov. 25, 1969. Not available NTIS.

Patent 3,485,028. Thermally Stable Stationary Phases for Temperature Programmed Gas Chromatography. Dec. 23, 1969. Not available NTIS.

Patent 3,542,708. Starch Polyethyleneimino Thiourethane Reinforced Rubbers. Nov. 24, 1970. Not available NTIS.

Patent 3,549,619. Method for the Preparation of Amylose Acetate Dispersions. Dec. 22, 1970. Not available NTIS.

Patent 3,553,196. High-Amylose Starch Acetate. Jan. 5, 1971. Not available NTIS.

Patent 3,558,501. Process for the Chlorohydrination of Allyltrimethylammonium Chloride. Jan. 26, 1971. Not available NTIS.

Patent 3,579,352. Extruder-Cooked Cereal Endosperm Particles and Instant Beverage Mixes Comprising the Same. May 18, 1971. Not available NTIS.

Patent 3,585,047. Enzymatic Improvement of Soybean Flavor and Stability. June 15, 1971. Not available NTIS.

Patent 3,585,109. Novel Process of Producing L(+)-Tartaric Acid. June 15, 1971. Not available NTIS.

Patent 3,589,982. Production of L-Asparaginase. June 29, 1971. Not available NTIS.

Patent 3,607,072. Novel Cysteine Derivative. Sept. 21, 1971. Not available NTIS.

Patent 3,616,250. Preferential Enzymatic Lysis of Vegetative Cells in Presence of Sporulated Bacterial Cells. Oct. 26, 1971. Not available NTIS.

Patent 3,642,574. Method for Producing Vaccine for Immunization of Poultry Against Marek's Disease. Feb. 15, 1972. Not available NTIS.

Patent 3,188,223. Protein-Polymeric Dialdehyde Compositions and Process of Coating a Base Therewith. June 8, 1965. Not available NTIS.

Patent 3,306,772. Solvent and Process for Obtaining Undepolymerized Amyloses. Feb. 28, 1967. Not available NTIS.

Patent 3,314,764. Picrate Process for Determining Quaternary Ammonium Content of Microbial Polysaccharides. Apr. 18, 1967. Not available NTIS.

Patent 3,321,320. Iron Butoxide Improved Polyhydric Phenol Modified Alkyd Compositions. May 23, 1967. Not available NTIS.

Patent 3,354,104. Pigment Dispersants Comprising Phosphonic Acid Diels-Alder Adducts of Vegetable Oil Materials. Nov. 21, 1967. Not available NTIS.

Patent 3,391,000. Process for Detoxifying and Debittering the Seeds of "Crambe Abyssinica." July 2, 1968. Not available NTIS.

Patent 3,392,026. Ammoniation Process for Detoxifying the Seeds of "Crambe Abyssinica" and Rape. July 9, 1968. Not available NTIS.

Patent 3,392,177. Conjugation of Vegetable Oils via Iron Tricarbonyl Complex and Decomposition Thereof by Carbon Monoxide. July 9, 1968. Not available NTIS.

Patent 3,405,080. Process for Preparing Polyether-Poly-Urethane-Starch Resins. Oct. 8, 1968. Not available NTIS.

Patent 3,425,971. Salt-Resistant Thickeners Comprising Base-Saponified Starch-Polyacrylo-Nitrile Graft Copolymers. Feb. 4, 1969. Not available NTIS.

Patent 3,542,644. Wet Strength Paper Comprising Starch Carbamoylethyl Ethers. Nov. 24, 1970. Not available NTIS.

Patent 3,607,370. Pressure-Sensitive Adhesive Tape Comprising Gluten Hydrolysate Derivatives. Sept. 21, 1971. Not available NTIS.

Patent 3,617,447. Production of Mevalonic Acid by Endomycopsis Fibuliger. Nov. 2, 1971. Not available NTIS.

Patent 3,634,475. Method for Removing Metals From Vegetable Oils. Jan. 11, 1972. Not available NTIS.

Patent 3,639,129. Production of Vegetable Protein Beverage Base. Feb. 1, 1972. Not available NTIS.

Patent 3,645,940. Polysaccharide-Reinforced Rubber. Feb. 29, 1972. Not available NTIS.

Patent 3,787,220. Molded Articles and Films. Jan. 22, 1974. Not available NTIS.

Patent 3,793,454. Harringtonine and Isopharringtonine for Treating L1210 of P388 Leukemic Tumors in Mice. Feb. 19, 1974. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 180,900. Treatment of Sickle Cell Anemia. Sept. 15, 1971. PC $4/MF $1.45.

Patent application 418,156. Preparation of a Chemically Stable Cholera Toxoid. Filed Nov. 21, 1973. PC $4.50/MF $1.45.

Patent application 420,977. Radiographic Test Stand. Filed Dec. 3, 1973. PC $4.25/MF $1.45.

Patent application 453,179. Spherically Corrected Reflecting Objective for Unit Magnification. Filed Mar. 20, 1974. PC $4.25/MF $1.45.

Patent application 412,496. Epileptic Seizure Warning System. Filed Nov. 2, 1973. PC $5.25/MF $1.45.

Patent application 446,896. Method for the Preparation of Oxygenated Benzo(c) Phenanthridine Compounds. Feb. 28, 1974. PC $4.75/MF $1.45.

Patent 3,807,387. Testing Method and Apparatus for the Confirmation of Monitored Electrocerebral Silence. Filed Apr. 10, 1972. Patented Apr. 30, 1974. Not available NTIS.

Patent 3,741,890. Solid Waste Disposal and Water Purification Method and Apparatus. June 26, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent 3,809,467. Audio-Visual Presentation System. Filed June 14, 1972. Patented May 7, 1974. Not available NTIS.

Patent 3,809,477. Measuring Apparatus for Spatially Modulated Reflected Beams. Filed Nov. 1, 1972. Patented May 7, 1974. Not available NTIS.

Patent application 381,329. Method of Making Long Length, Seamless Porous Tubes and Rods. Filed July 20, 1973. PC $4/MF $1.45.

Patent application 465,055. Method of Obtaining Core Samples. Filed Apr. 29, 1974. PC $4/MF $1.45.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 461,073. Lightening Current Measuring Systems. Filed Apr. 15, 1974. PC $4/MF $1.45.

Patent 3,404,348. Low Level Signal Limiter. Patented Oct. 1, 1968. Not available NTIS.

Patent 3,648,516. Thin Film Gauge. Patented Mar. 14, 1972. Not available NTIS.

Patent application 461,477. An Internally Supported Flexible Duct Joint. Filed Apr. 16, 1974. PC $4/MF $1.45.

Patent application 462,706. Anti-Gravity Device. Filed Apr. 22, 1974. PC $4/MF $1.45.

Patent application 462,903. Apparatus for Forming Dished Ion Thruster Grids. Filed Apr. 22, 1974. PC $4/MF $1.45.

Patent application 464,721. Method of Determining Bond Quality of Power Transistors Attached to Bed Substrates. Filed Apr. 26, 1974. PC $4/MF $1.45.

Patent application 464,723. Isolated Output System for a Class D Switching-Mode Amplifier. Filed Apr. 26, 1974. PC $4/MF $1.45.

Patent 3,806,756. Image Tube. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,807,656. Airlock. Patented Apr. 30, 1974. Not available NTIS.

Patent 3,811,094. Bio-Isolated DC Operational Amplifier. Patented May 14, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 28, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds: Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-26-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-4-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-23-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-22-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-3-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-8-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools. Cutlery; Jacks.	11-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-5-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	2-14-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents..... Numbers 1,646 to 1,655, inclusive

REISSUES

OCTOBER 15, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

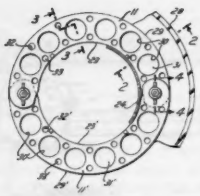
28,196
FLAT TIRE SAFETY ROLLER AND WARNING INDICATOR

Theodore C. Patecell, 33—52 156th St., Flushing, N.Y. 11354

Original No. 3,635,273, dated Jan. 18, 1972, Ser. No. 865,122, Oct. 9, 1969. Application for reissue Jan. 10, 1973, Ser. No. 322,425

Int. Cl. B60c *17/04*

U.S. Cl. 152—158 51 Claims



1. A safety insert for inflatable tires of the tubeless type wherein beads at the inner open periphery of the tire are adapted to sealably engage side flanges of a mounting rim and said rim intermediate the flanges has a drop-center of reduced diameter facilitating attachment and detachment of the tire, said safety device comprising a plurality of similar arcuate members, each of said arcuate members having at each end essentially circular coupling portions of reduced thickness in the plane of said members to interfit with coupling portions on adjacent members, said circular portions having at the centers thereof coacting coupling means providing, when loosely coupled, wide coplanar pivotal movement of adjacent arcuate members, whereby after partial assemblage within a tire, and then mounting one tire bead on a rim, the subassemblage can be passed over the rim and into the drop-center thereof for final assemblage about the rim by coupling a single joint, and said coupling means providing firm clamping of interfitting coupling portions of said plurality of arcuate members to form a ring member having an inner periphery seating in the drop-center of said rim and an outer periphery protruding beyond the flanges of said rim, said inner and outer peripheries of the ring being formed of rigid plastic material having lubricant qualities, and means joining said inner and outer peripheries in a lightweight structure providing a radial compressive strength appropriate to withstand the loads for which the particular tire is intended.

28,197
PROCESS FOR THE PRODUCTION OF AROMATIC POLYBENZIMIDAZOLES

Yoshio Ohfuji, Kurashiki, and Tamotsu Eguchi, Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Original No. 3,655,632, dated Apr. 11, 1972, Ser. No. 72,537, Sept. 15, 1970. Application for reissue Nov. 27, 1973, Ser. No. 419,456

Int. Cl. C08g *33/02*

U.S. Cl. 260—78.4 N 10 Claims

1. A process for the production of an aromatic polybenzimidazole which comprises heating a mixture of an aromatic tetramine containing two groups of amine substituents, said amine substituents in each group being in an ortho position relative to each other, and an aromatic dinitrile at a temperature sufficiently high to maintain at least one of the reactants in a molten state at least during the initial stage of the reaction, in the presence of an ammonium salt of an acid selected from the group consisting of inorganic acids and organic sulfonic acids, until the polycondensation reaction is completed.

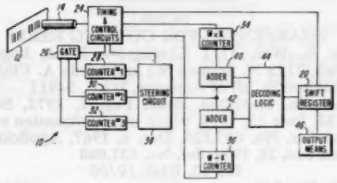
28,198
CODED RECORD AND METHODS OF AND APPARATUS FOR ENCODING AND DECODING RECORDS

Bruce W. Dobras, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Original No. 3,784,792, dated Jan. 8, 1974, Ser. No. 239,168, Mar. 29, 1972. Application for reissue Apr. 4, 1974, Ser. No. 457,907

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E 17 Claims



6. A system for interpreting a record encoded with a sequence of code areas of different sizes representing different code values which comprises

a reader responsive to the code areas for sensing the code areas on the record,

a plurality of storage means each adapted to store a first value representing the size of one of the code areas,

first gating means between the reader and the storage means for storing values representing the sizes of different code areas in different ones of the storage means,

a first register for storing a second value less than the size of a code area,

a second register for storing a third value greater than the size of a code area,

first control circuit means controlled by the reader for storing the second and third values in the first and second registers representing the different code areas,

comparing means for determining the relation of the first value to the second and third values and coupled to the first and second registers,

second gating means between the plurality of storage means and the comparing means for supplying first values in sequence to the comparing means,

and second control circuit means controlled by the comparing means for assigning code values to the code areas.

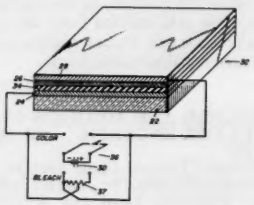
28,199
ELECTRO-OPTICAL DEVICE HAVING VARIABLE OPTICAL DENSITY

Satyendra Kumar Deb, Stamford, Conn., and Robert Frank Shaw, Cambridge, England, by American Cyanamid Company, Stamford, Conn., assignee

Original No. 3,521,941, dated July 28, 1970, Ser. No. 622,862, Feb. 7, 1967, which is a continuation-in-part of abandoned applications Ser. No. 567,764, July 25, 1966, and Ser. No. 607,116, Dec. 7, 1966. Application for reissue June 1, 1973, Ser. No. 366,233

Int. Cl. G02f *1/28*

U.S. Cl. 350—160 R **24 Claims**



1. A device having an electric field responsive radiation transmitting characteristic comprising a solid persistent electrochromic material and a current carrier permeable insulator.

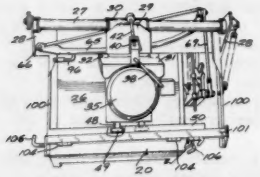
28,200
SHARPENERS FOR CUTTING REELS

Wilmer E. Witt, 1111 Greengrove Road; Eugene A. Sousek, 2113 N. Summit St.; and Clyde A. Clish, 1606 S. Madison St., all of Appleton, Wis. 54911

Original No. 3,638,363, dated Feb. 1, 1972, Ser. No. 46,192, June 15, 1970, which is a continuation of application Ser. No. 687,528, Dec. 4, 1967. Application for reissue Jan. 28, 1974, Ser. No. 437,060

Int. Cl. B24b *19/00*

U.S. Cl. 51—249 **20 Claims**



1. In combination with a cutter assembly having a frame and having a rotatably mounted cutting reel provided with angled blades, each having a cutting edge, a sharpening stone, means including a carriage supporting said stone on the frame for movement axially of the reel in a position to engage and act on one of said blades thereof, a lever element, means for releasably maintaining the reel in a predetermined indexed relationship to said stone so that sharpening engagement of the stone with the same blade is continuously maintained as the stone moves from one end of a blade to the other, said last means including indexing mechanism operatively connecting said lever element to the reel, means between the carriage and lever element for causing automatic partial positive rocking movement of the reel in [response to] *accordance with* axial movement of the carriage, which movement is so limited in extent that the reel remains in said indexed relationship while the stone remains continuously in sharpening engagement with only one and the same blades as it travels from one end of said blade to the other, said last means including control mechanism between the carriage and [reel-rocking mechanism] *said lever element* whereby the rocking movement is so correlated with the carriage movement and angle of the blade that said angled blade is maintained in proper edge sharpening relationship with the stone as the stone is moved axially.

28,201
END CLOSURE FOR DISPOSABLE DUST BAG

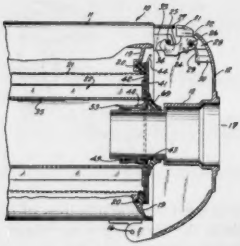
George Leslie Hughes, Biddenham, England, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Original No. 3,423,907, dated Jan. 28, 1969, Ser. No. 483,183, Aug. 27, 1965. Application for reissue Oct. 13, 1969, Ser. No. 869,974

Claims priority, application Sweden, Sept. 8, 1964, 10,791/64

Int. Cl. B01d *29/10*

U.S. Cl. 55—367 **8 Claims**



1. An end cover for a dust bag comprising a mounting plate including inner and outer flexible sheets, said outer sheet having a hole therein, said inner sheet having two flaps cut therefrom and being swingable about parallel fold lines out of the plane of said inner sheet to define an opening of greater area than said hole, said sheets being fixed to one another about said opening so as to center said hole with respect to said opening and thereby expose a portion of said outer sheet at said opening to constitute an abutment zone preventing outward swinging of said flaps, spring means urging said flaps against said abutment zone to close said hole, said spring means comprising a single bent wire spring of generally U-shaped configuration having legs joined at one end by a crosspiece and arms extending from the free ends of said legs, said spring being arranged with said legs extending lengthwise of and at the vicinities of said fold lines of the flaps at the outer side of said inner sheet and said crosspiece being anchored between said sheets fixed to one another, and with the arms of said spring engaging the inner surfaces of said flaps so that inward opening of said flaps is torsionally resisted by said legs.

28,202
BOOK FORMED OF PLASTIC STRIPS AND STUDS

William H. Abildgaard, Los Altos Hills, and Charles T. Groswith III, Los Altos, Calif., assignors to Velo-Bind, Inc.

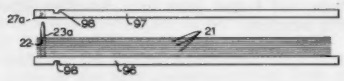
Original No. 3,596,929, dated Aug. 3, 1971, Ser. No. 799,045, Feb. 13, 1969. Application for reissue Dec. 29, 1972, Ser. No. 319,328

Int. Cl. B42d *1/06*

U.S. Cl. 281—21 **3 Claims**

2. A bound book comprising a plurality of sheets each formed with a plurality of spaced apertures adjacent one margin, *and a binding structure consisting of two components clamping said sheets together, and characterized by the absence of a spine connection between the two*

components around the spine, one said component consisting of a first *thermo*plastic *non-resilient* self-supporting, strip underlying one margin on one side of said book and covering said apertures and extending substantially the entire length of said book, *the other said component consisting of* a second [plastic] *thermo-plastic, non-resilient* self-supporting strip overlying one margin of the side of said book opposite said first strip and of a length substantially equal to said first strip *and having stud receiving apertures therein formed with enlargements of said apertures on the outside surface of said second strip;* said strips initially being freely movable toward and away from each other *in infinitely small dimensions* to accommodate a wide *and continuous* range of thicknesses of books, [a plurality of] *said first component further comprising at least three* studs [fixed to] *integrally molded with* said first strip and *projecting from one surface thereof, the opposite surface being imperforate, said studs being smooth and being of uniform cross-section between said strips and* initially of a length greater than the greatest thickness of said range of thicknesses of books, said studs extending through the apertures in said sheets and the apertures in said second strip, said studs sheared close to the surface of said second strip opposite from said sheets and formed with heads larger than said apertures *and substantially filling said enlargements* and permanently secured to said second strip *directly in engagement with the side of said second strip opposite said sheets, said strips at the completion of making said book being the same distance apart as the thickness of said sheets bound between said strips* said strips being totally disconnected from each other except by said studs, *and each said strip being of substantially uniform cross-section and of substantially uniform thickness throughout from end to end.*



28,203
PROCESS OF PRODUCING CITRIC ACID

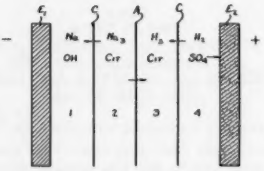
Guenther Schulz, Mannheim, Germany, assignor to Joh. A. Benckiser G.m.b.H. Chemische Fabrik, Ludwigshafen (Rhine), Germany

Original No. 3,086,928, dated Apr. 23, 1963, Ser. No. 832,446, Aug. 10, 1959. Application for reissue Nov. 4, 1971, Ser. No. 195,848

Claims priority, application Germany, Aug. 9, 1958, B 49,917

Int. Cl. C07c *51/02, 51/42, 55/22*

U.S. Cl. 204—180 P **6 Claims**



E1 = Stainless Steel Cathode
E2 = Graphite Anode
C = Cation Exchange Membrane
A = Anion Exchange Membrane
1,2,3,4 = Numbers Of Compartments

1. In a process of recovering citric acid from strongly contaminated citric acid solutions obtained on fermentation of sugar-containing solutions by means of Aspergillus niger, the steps which comprise concentrating by evaporation in a vacuum the fermentation citric acid solution to a citric acid concentration between about 40% and about 85%, adding to the concentrated citric acid solution an alkali metal compound selected from the group consisting of an alkali metal hydroxide, an alkali metal carbonate, and an alkali metal bicarbonate in an amount sufficient to form the mono-alkali metal dihydrogen citrate, allowing the resulting citrate solution to stand until crystallization is completed, separating the precipitated crystalline mono-alkali metal di-hydrogen citrate from the mother liquor, washing said mono-alkali metal di-hydrogen citrate with water, combining the mother liquor and the wash water, adding to said combined mother liquor and wash water a calcium compounds selected from the group consisting of calcium hydroxide, calcium carbonate, and calcium chloride, in an amount corresponding to one mole of calcium for one mole of calculated citric acid present in the mother liquor, filtering off the precipitated mono-alkali metal calcium citrate, suspending said mono-alkali metal calcium citrate in water, adding thereto the stoichometric amount of sulfuric acid to react with and precipitate substantially all the calcium present in said mono-alkali metal calcium citrate, filtering off the precipitated gypsum, and converting the resulting mono-alkali metal di-hydrogen citrate into substantially pure citric acid by electrodialysis.

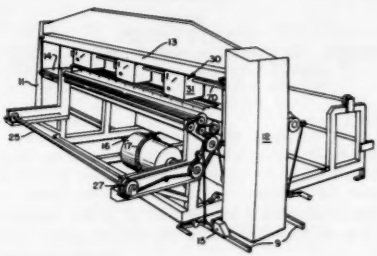
28,204
DUAL HEAD FOR A MULTI-NEEDLE SEWING MACHINE

David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Louisville, Ky.

Original No. 3,749,037, dated July 31, 1973, Ser. No. 210,903, Dec. 22, 1971. Application for reissue May 22, 1974, Ser. No. 472,153

Int. Cl. D05b *11/00*

U.S. Cl. 112—117 **7 Claims**



1. *Multi or dual* [Dual] heads for a multi-needle machine of the type sewing a series of long straight or zigzag lines of stitching into elongate superposed strips of bedding material passing through the machine, comprising:

A substantially identical 1st and 2nd sewing heads, one on each side of a vertically arranged transverse plane, said 1st and 2nd sewing heads including

1. a frame, and
2. corresponding 1st and 2nd
   a. frame-mounted multi-needle bars, and
   b. frame-mounted means for positively reciprocating said multi-needle bars vertically; and

B. a common drive means for positively driving both sewing heads in a substantially fixed *out-of-phase* [phase] relationship [.] *wherein said common means includes*

1. 1st and 2nd rotary shafts, and

2. means for rotating said shafts in opposite counter-balancing directions.

28,205

PUSH BUTTON PULSE SIGNAL GENERATOR

Leon R. Britton, 4018 N. Sacramento, Chicago, Ill. 60618; Frank S. Vojir, 2319 Gunderson Ave., Berwyn, Ill. 60402; and William W. Wright, 530 Pershing Ave., Wheaton, Ill. 60187

Original No. 3,718,828, dated Feb. 27, 1973, Ser. No. 170,729, Aug. 11, 1971. Application for reissue Nov. 8, 1973, Ser. No. 413,857

Int. Cl. H02k *35/06*

U.S. Cl. 310—15 4 Claims

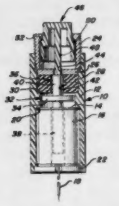
1. A push button signal generator comprising, in combination: a housing having a longitudinal axis and having mounted therein the following:

a. a coil with a center opening parallel to the longitudinal axis;

b. a plunger of magnetic material including a portion movable in the coil opening, a flange portion outside one end of the coil and a projection extending from said flange portion;

c. a magnet adjacent said flange portion for magnetically attracting said flange portion in a first direction;

d. a keeper plate *on said magnet* for engaging said projection from said plunger to limit the travel of



said plunger in said first direction; and

e. push button means including [an extension] *means* for engaging said plunger and driving said plunger *from said keeper plate* in a direction opposite the first direction.

PLANT PATENTS

OCTOBER 15, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,637
APPLE TREE

Donald W. McKenzie, Havelock North, New Zealand, assignor to Stark Bro's Nurseries & Orchards Co., Louisiana, Mo.

Filed Aug. 1, 1973, Ser. No. 384,616
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a combination of some of the best characteristics of both parent varieties, along with features which are superior to other late summer apples, the production of fruit having excellent texture and flavor, said flavor being mildly subacid and somewhat similar to but sweeter than that of "Cox Orange" fruit, a fruit form similar to that of "Golden Delicious," but somewhat smaller in size, a distinctive and attractive golden yellow fruit color, with an attractive bright red blush, a late summer fruit maturing season which is about the same as "Cox Orange" grown in the mid-western section of the United States, and about two weeks earlier than the variety "Jonathan" (unpatented), an ability of the fruit to hang on the tree until fully colored and ripe without premature dropping, and good keeping qualities of the fruit.

3,638
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc, Ashtabula, Ohio

Filed Aug. 28, 1973, Ser. No. 392,359
Int Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of elatior begonia characterized particularly by its clear blue-pink color of the large flower petals, compact and sturdy plant growth, its capability of being propagated from leaf cuttings that allows for sufficient controls to permit planned commercial flowering at any time of the year, greater resistance to common powdery mildew, dark green heavy crisp foliage distinguished by some twisting at maturity, and by its improved appearance and durability compared to the parent variety Riegers Schwabenland Pink.

3,639
ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Sept. 6, 1973, Ser. No. 394,629
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—29 **1 Claim**

1. A new and distinctive variety of rose plant substantially as herein shown and described, characterized by its rapid vegetative growth and the ability to break freely from a cut to maintain a high production rate of about 60 flowers annually; by its small amount of blind canes due to dark cloudy weather; and by the longer stem length and good keeping qualities of its blooms.

3,640
ROSE PLANT

Michel Kriloff, Chemin des Brusquets-St. Maymes, Les Roses, 06600 Antibes, France

Filed Oct. 17, 1973, Ser. No. 407,261
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. The new and distinct variety of rose plant as described and illustrated.

3,641
PEONY PLANT

Carl George Klehm, Arlington Heights, Ill., assignor to Klehm Properties, Inc., Arlington Heights, Ill.

Filed Oct. 24, 1973, Ser. No. 409,172
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of *Paeonia lactiflora* substantially as herein shown and described, characterized by the pink anemone form of its flowers which display a broad central tuft of pink staminodes having ruffled bright golden margins, its very busy growth habit, and the profuse production of flowering stems on each bush.

3,642
PEONY PLANT

Carl George Klehm, Arlington Heights, Ill., assignor to Klehm Properties, Inc., Arlington Heights, Ill.

Filed Oct. 26, 1973, Ser. No. 410,207
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of peony plant substantially as herein shown and described, characterized by the unique vibrant pink coloration of its blooms which have a bomb peony flower form composed of recurled and crinkled petals, by its vigorous growth habit and by its clean, strong foliage carried on stiff weather and disease resistant stems.

3,643
BLUEGRASS PLANT

Kevin Joseph McVeigh, Box 1741, State Highway 27, Somerset, N.J. 08873, and Cyril Reed Funk, Jr., 4 Delaware Drive, East Brunswick, N.J. 08816

Filed Nov. 5, 1973, Ser. No. 413,027
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct selection of Kentucky bluegrass plant, substantially as herein shown and described, characterized by very good performance as a turfgrass, an aggressively spreading dense turf and good to excellent resistance to important diseases.

PATENTS

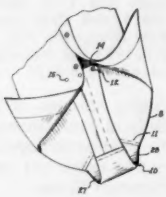
GRANTED OCTOBER 15, 1974

GENERAL AND MECHANICAL

3,840,899
READY TO WEAR SARI
Usha Saxena, 1384 Bryan Ave., Morris, Ill. 95118
Filed Oct. 29, 1973, Ser. No. 410,875
Int. Cl. A41d *1/22*
U.S. Cl. 2—74 **5 Claims**

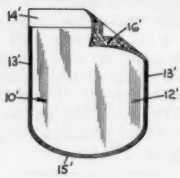
1. A ready to wear sari gown, comprising a length of sari material and an underwear base, said length of sari material including a first attached end and a second free end, an upper border along said length of sari material extending from said first end to said second end, said under wear base including an encircling waist portion, a skirt portion integral with said waist portion, said length of sari material including a pre-formed section extending from said first end once around the periphery of said under wear base, said pre-formed section being secured along a portion of said upper border to said waist portion of said under garment, said pre-formed section including an intermediate pleated section, pleats therein secured to said waist portion along a front segment thereof, said length of sari material including a free draping section extending from said intermediate pleated section to said second free end for draping around the body of a wearer to complete a sari, and a blouse secured to said under slip and said pre-formed section of sari material secured thereto.

3,840,900
BODY SHIRT FOR MEN
Luxmi S. Cruz, P.O. Box 12483, Flagstaff, Ariz. 85711
Filed May 4, 1973, Ser. No. 357,362
Int. Cl. A41b *1/00*
U.S. Cl. 2—77 **6 Claims**



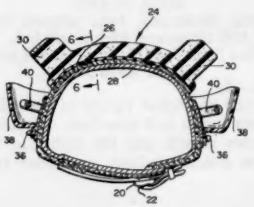
1. A body shirt for men having a rear shirttail and a pair of front shirttails, said body shirt comprising in combination:
   a. a crotch strap secured to the lower extremity of the rear shirttail, said crotch strap including a seat and a two part front section;
   b. a pair of members forming each of said two parts of said front section, each said pair of members slidably receiving the other of said pair of members in an interleaving manner to permit each said part of said front section to be joined to and separated from one another; and
   c. securing means for detachably securing said front section to each of the front shirttails; whereby, said crotch strap retains the rear and front shirttails of said body shirt adjacent the body of the wearer without discomfort or restriction.

3,840,901
POCKET ASSEMBLY HAVING ADHESIVE MEANS FOR ATTACHMENT TO A GARMENT
Charles U. Eyster, Danville, Calif., assignor to Becton, Dickenson and Company, East Rutherford, N.J.
Filed June 21, 1973, Ser. No. 372,184
Int. Cl. A41d *27/20*
U.S. Cl. 2—247 **8 Claims**



1. A unitary pocket assembly which is capable of being readily affixed on a garment at any desired location comprising;
   at least a front panel having a top edge for forming the access opening between said panel and the garment to which the pocket is to be attached; and
   pressure-sensitive adhesive means located on at least the portions of the periphery of said panel.

3,840,902
SAFETY BELT FOR MOTORCYCLES
Charles F. McNeill, 162 Mirin Ave., Roosevelt, N.Y. 11575
Filed Oct. 9, 1973, Ser. No. 404,177
Int. Cl. A41f *9/00*
U.S. Cl. 2—311 **6 Claims**



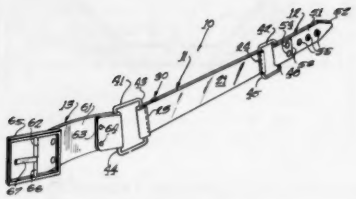
1. An improved safety belt for use by passengers riding in tandem on a vehicle, comprising a belt of a flexible material having a front portion and a rear portion, means for securing

said belt about a driver's waist, a pair of grip handles secured to said belt and shock absorbing means secured to the rear portion of said belt.

3,840,903
BELT

Gary Lee Mack, 808 Sunrise St., and David Carlton Casderbera Hartful, 603 Johnson St., both of Murfressboro, Tenn. 37130

Filed Jan. 21, 1974, Ser. No. 435,031
Int. Cl. A41f 3/02
U.S. Cl. 2—338 **7 Claims**



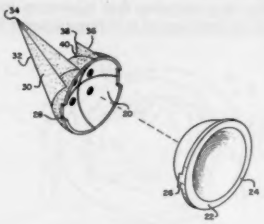
1. A belt adapted to be worn about the waist of the wearer comprising an elongated tubular casing of transparent flexible material defining an interior compartment therein, said casing being of an elongated substantially rectangular box-like configuration, a first loop member affixed to one end of said casing and comprised of a rectangular frame having an inner side edge and an outer side edge, said first end of said casing being folded about said inner side edge of said first loop member in a manner folded over onto itself and then suitably fastened to itself to retain said first loop member affixed to said casing, said second end of said casing being wrapped about said inner side edge of said second loop member in a manner folded onto itself and then suitably fastened to itself to retain said second loop member affixed to said casing, a tongue member affixed to said first loop member and projecting outwardly therefrom and being formed of flexible material, a buckle member affixed to said second loop member and projecting outwardly therefrom and being formed of flexible material, a threaded aperture provided in a top edge of said casing and communicating with said compartment formed interiorly thereof to provide access thereto, a cap member associated with said aperture comprising an enlarged head portion and a concentrically disposed outwardly projecting threaded shaft portion, said shaft portion adapted to be threadedly engaged in said threaded aperture to seal said compartment in a water tight manner, and said compartment adapted to container water therein.

3,840,904
ACETABULAR CUP PROSTHESIS

Raymond G. Tronzo, 133 S. 36th St., Philadelphia, Pa. 19104

Filed Apr. 30, 1973, Ser. No. 355,875
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **4 Claims**

1. An acetabular cup prosthesis including a cup shaped insertion and a guide groove across the inside of the insertion

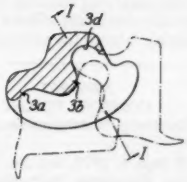


at substantially diametrical distance for a surgical saw by which it can be cut up for removal.

3,840,905
ENDOPROSTHETIC KNEE JOINT

Graham Deane, Chesterton, England, assignor to National Research Development Corporation, London, England

Filed Sept. 17, 1973, Ser. No. 397,928
Claims priority, application Great Britain, Sept. 18, 1972, 43151/72
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **10 Claims**



1. An endoprosthetic knee joint device comprising femoral and tibial components having respective generally concave and convex bearing surfaces for mutual articulatory engagement with the latter received in the former, which surfaces are of similar saddle shapes including pommels at one pair of corresponding ends, and the longitudinal medial profiles of which shapes are mutually divergent.

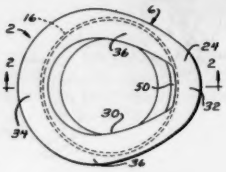
3,840,906
DISPOSABLE BEDPAN

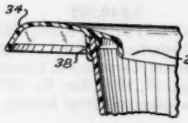
James A. Huggins, Libertyville, Ill., assignor to Med-Pak Corporation, Charleston, W. Va.

Filed Apr. 11, 1973, Ser. No. 349,958
Int. Cl. A61g 9/00
U.S. Cl. 4—112 **5 Claims**

1. A bedpan comprising an open top pan member having a sidewall, a seat member at said open top and having an opening for communication with the interior of said pan member, said opening being generally oval-shaped, said seat member having a dish-shaped seat surface that slopes from a crest region outwardly of said opening and outwardly of said open top toward said opening and completely therearound so that a patient tends to stay in place on said seat member, a flange on said seat member lying axially and radially inwardly of the open top of the pan member to define said oval-shaped opening, said flange extending the full inner circumferential extent of said seat member and being at varying radial distances from said sidewall and being closely adjacent to said sidewall in a region thereof at one end of the oval to facilitate emptying the bedpan thereat, and means forming a fluid tight connection

between said seat member and said pan member; said means comprising a fist circular ring element of U-shaped cross section on one of said members and a second circular ring element on the other member that telescopes into said U-shaped element, at least one of said ring elements being suffi-



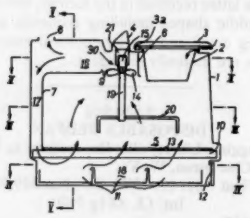


ciently yieldable within its elastic limits to distend and receive the other element upon assembly of the elements, the two elements being so constructed as to cause them to interlock upon such assembly, said ring elements being of such diameters as to permit assembly at any relative orientation about a common axis passing through the centers of said elements.

3,840,907
COMPOST TOILET

Hardy Mikael Sundberg, Waldheimstrasse, 6314 Unterageri, Switzerland

Filed Sept. 6, 1972, Ser. No. 286,708
Claims priority, application Switzerland, Sept. 9, 1971, 13220/71
Int. Cl. A47k *11/02*; C05f *3/04*
U.S. Cl. 4—133 **6 Claims**

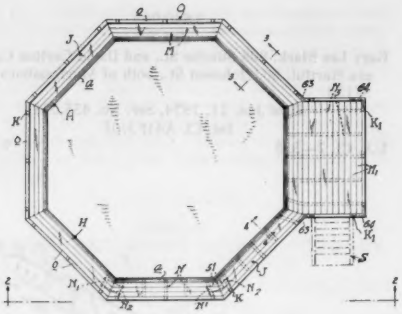


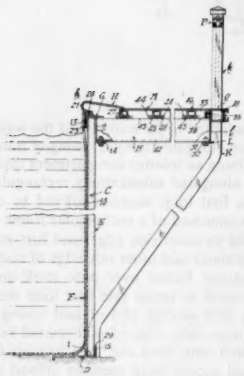
1. A compost toilet comprising, in combination, means defining an excrement collecting compartment, at least one support arranged in said collecting compartment, a mat carried by said support for building up a bacteria nutritive substratum, blower means located in said collecting compartment for positively circulating air therein, and air guide means for directing the circulated air against said mat, an air withdrawal pipe being in flow communication with said collecting compartment via air channels defined by said air guide means, said pipe being directed upwardly to the ambient atmosphere like a chimney, with a heating source in said air guide means for the circulated air, which source is so arranged that it is free from contact with said mat and therefore also with the excrements.

3,840,908
OCTAGONAL SWIMMING POOL

Samuel Greene, 18 Underwood Dr., West Orange, N.J.

Filed Aug. 7, 1972, Ser. No. 278,400
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **10 Claims**

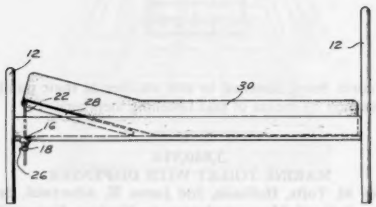




1. A swimming pool comprising:
a base including a horizontal upwardly facing channel;
an enclosure wall including a plurality of extruded sections of the same height each having its bottom edge seated in said channel and each having its vertical longitudinal edges formed to interlock directly and separably with the juxtaposed vertical longitudinal edges of adjacent sections, respectively;
a cap including a downwardly facing channel straddling and seated on the top edge of said wall;
means adjustably connecting said base to said cap providing for clamping said wall sections between said base and said cap and rigidly holding the cap in position on said wall, with the addition of a walk-around deck comprising a plurality of posts spaced apart around said enclosure wall each having a lower end portion separably connected to said base, an upper portion in spaced opposed relation to the enclosure wall and an inclined portion intermediate portion, a support bracket encircling said enclosure wall and separably secured on said upper portions of said posts, a plurality of horizontal purlins supported on and between said cap and said support bracket, and a floor including a plurality of elongated extruded metal sections separably but rigidly set on said purlins with their longitu-

dinal edges parallel with the corresponding side of said enclosure wall and each with one longitudinal edge directly interlocked with the juxtaposed edge of the next adjacent section.

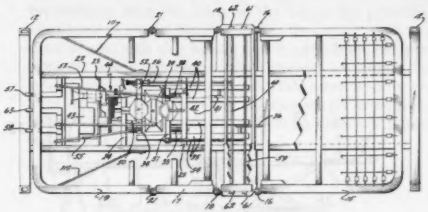
3,840,909
MATTRESS SUPPORT
Mildred A. Detko, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Mar. 28, 1973, Ser. No. 345,554
Int. Cl. A61g 7/10; A47c 3/32
U.S. Cl. 5—64 **1 Claim**



1. In combination with a bed having a horizontal rectangular frame with horizontal side and end pieces and a mattress resting on top:
first and second vertical elongated members;
first and second clamp means, each clamp means employing a manually operable locking device controlled by a thumb screw, each clamp means being detachably secured to a corresponding side piece, both clamp means being disposed adjacent a corresponding end, each clamping means slidably receiving a corresponding member and locking same at any desired position to enable the heights of the top ends of the members to be adjusted as necessary;
a flat rectangular plate spanning the side pieces with one end resting thereon and extending therebetween, the other end of the plate being pivotally secured to the top ends of both members; and
cooperating roller means including sliding rollers secured to said one end of the plate and the side pieces to maintain said one plate in slidable yet secured position.

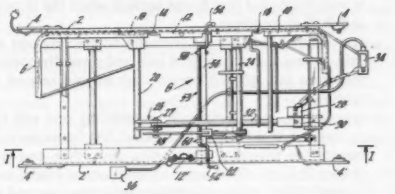
3,840,910
CONTROL MECHANISM FOR ELECTRICALLY OPERABLE BED
Frank W. Damico, Stevens Point, Wis., assignor to Joeens Furniture Company, Stevens Point, Wis.
Filed Mar. 16, 1973, Ser. No. 341,869
Int. Cl. A47c 3/32
U.S. Cl. 5—66 **12 Claims**

1. In an electrically operable bed having a horizontal frame; an articulated spring supported by said frame having at least one adjustable section; electrically operable actuating means mounted on said frame for effecting desired movements of said spring section, including drive means for moving said section relative to said frame; a reversible electric motor mounted on said frame, and transmission means mounted on said frame for selectively operating said drive means by said motor; the improvement which comprises: limiting means operably associated with said drive means for limiting the degree of movement of the spring section movable by said drive means to a predetermined degree of movement, said predetermined degree of movement being less than the full raising movement obtainable by said electrically operable actuating means; and wherein said electrically operable actuating means includes a first control means accessible to an occupant of said bed and being operably connected to said limiting means whereby said first control means is operable by an occupant of said bed to selectively operate said drive means only to the extent permitted by said limiting means; and



a second control means positioned on said bed remote from said occupant to selectively operate said drive means to the full raising movement obtainable independently of said limiting means.

3,840,911
HOSPITAL BED WITH SELECTOR MECHANISM
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, both of Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Dec. 7, 1971, Ser. No. 205,647
Int. Cl. A47c 3/32, 7/10
U.S. Cl. 5—68 **2 Claims**

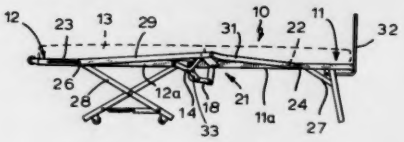


1. A hospital bed structure which comprises
a pair of side rail members;
an intermediate assembly linking its lateral side attached to said pair of side rail members;
a head assembly pivotally attached to one end of said intermediate assembly;
a foot assembly pivotally attached to the other end of said intermediate assembly;
elevating means fixedly attached to said pair of side rail members and pivotally attached to said head assembly;
linking means fixedly attached to said foot assembly and means for removably attaching said linking means to said head assembly,
said linking means comprising a head linkage member, an intermediate linkage member and a foot linkage member, said intermediate linkage member being pivotally attached to one of said side rail members and pivotally attached at one end to said head linkage member and at the other end to said foot linkage member;
manually operable means for engaging and disengaging the attachment of said linking means to said head assembly; pin means;
means attached to the head assembly to link the pin means to the foot assembly; and
means to engage the linkage means.

3,840,912
FOLDING BED

Jacob G. Fischer, 2178 N. Jerusalem Rd., North Bellmore, N.Y. 11710

Filed May 11, 1973, Ser. No. 359,450
Int. Cl. A47c 19/12
U.S. Cl. 5—111 9 Claims



1. A mattress supporting folding bed structure comprising: first and second frame sections for supporting the mattress thereon,

means pivotally interconnecting said first and second frame sections to provide movement thereof between a closed bed position wherein said sections are substantially mutually parallel and a second open bed position where said frame sections are substantially coplanar, said pivotal interconnection means comprising,

a first arm pivotally connected to and depending downwardly from said first frame section when the structure is in the open position,

a first control link, means pivotally connecting one end of said control link to said first arm and pivotally connecting the other end of said control link to said second frame section,

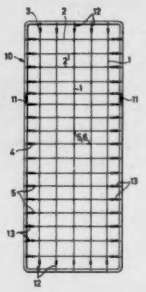
a spacer link, means pivotally connecting one end of said spacer link to a fixed point on said first frame section and means for pivotally connecting the other end of said spacer link to a fixed point on said second frame section, a support link, means pivotally connecting one end of said support link to a fixed point on said first frame section, and means pivotally connecting the other end of said support link to a point intermediate of said first control link, said support link limiting the pivoting action of said first and second frames with respect to each other about the pivot points of said first control link to substantially said open coplanar position as said frame sections are pivoted from said closed to said open position.

3,840,913
RELATING TO A NET FOR UPHOLSTERED FURNITURE

Josef Feische, Hellefeld, Germany, assignor to Eftex-Texmato G.m.b.H. & Co., Osnabruck, Germany

Filed Feb. 22, 1973, Ser. No. 334,816
Claims priority, application Germany, Feb. 25, 1972, 2208866
Int. Cl. A45f 1/00
U.S. Cl. 5—191 5 Claims

1. A net for attachment to the frame of a chair, bed or cot, comprising cords extending generally longitudinally and transversely and adapted to meet the sides of the frame at right angles, the longitudinally extending cords being under lower tension than those which extend transversely, fastening members selected from the group consisting of rings and fasteners,

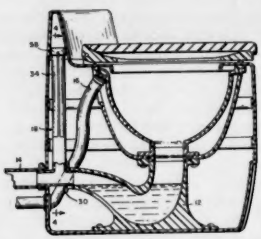


said cords being fastened to one another at their points of intersection by means of said fastening members.

3,840,914
MARINE TOILET WITH DISPENSER

Wesley M. Tufts, Holliston, and James H. Albertassi, Braintree, both of Mass., assignors to Nautron Corporation, Braintree, Mass.

Filed Oct. 19, 1972, Ser. No. 299,177
Int. Cl. E03d 9/02, 9/03
U.S. Cl. 4—224 15 Claims



1. The combination with a marine toilet comprising a bowl, a trap at the bottom of the bowl connected to a discharge line, a flush line for delivering clean water to the top of the bowl to effect flushing, and means for initiating flushing of the bowl; of a receptacle from which pairs of separately maintained tablets of different composition are adapted to be dispensed, means associated with the receptacle and discharge line adapted in one position to gravitationally receive a pair of tablets from the receptacle and in the other position to gravitationally deliver the tablets to the discharge line, and means operable by flushing the toilet to effect movement of said second means from the one position to the other and back to the one position to deliver a pair of tablets to the discharge line at the time of flushing and to receive a fresh pair of tablets ready for the next flushing operation.

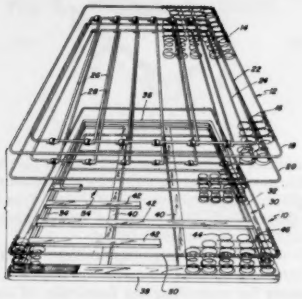
3,840,915
FOUNDATION SPRING UNIT

Leroy J. Simon, Chicago, Ill., assignor to Seeta, Inc., Chicago, Ill.

Filed Feb. 8, 1973, Ser. No. 330,656
Int. Cl. A47c 23/04, 23/02
U.S. Cl. 5—261 10 Claims

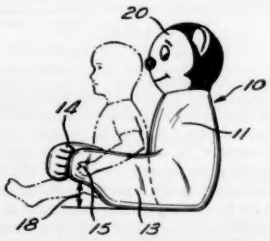
1. A foundation spring unit for supporting a mattress, said unit comprising a plurality of longitudinally extending col-

umns and transversely extending rows of coil springs, outer border means extending around said unit and being connected to the coil springs at the periphery of said unit, a central support member comprising a substantially rectangular peripheral element and at least one elongated connecting element, said peripheral element being disposed with its edge portions extending longitudinally and with each of its end portions extending diametrically across and being connected to coil springs of a respective one of said transverse rows at a



distance inwardly from the longitudinal ends of said unit of at least one-fourth the length of said unit, said connecting element being disposed parallel to the end portions of said peripheral element and extending between and being connected to the edge portions of said peripheral element and extending diametrically across and being connected to coil springs of a respective one of said transverse rows, whereby the central portions of said foundation unit will be reinforced particularly in the transverse direction.

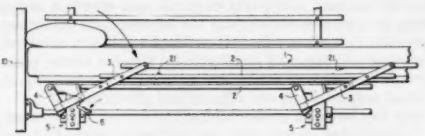
3,840,916
INFANT SUPPORT
Luree C. Jennings, 600 E. 63rd St., Marathon, Fla. 33050
Filed Apr. 13, 1973, Ser. No. 350,685
Int. Cl. A47c *22/00*
U.S. Cl. 5—327 R **5 Claims**



1. In an infant support comprising a self-supporting cushion body in the form of a non-jointed split ring having flexible, overlapping arms at the front which are separable so that said split ring may encircle an infant with the arms overlapped at the front of the infant and with the back of the split ring providing support for the back of the infant, the improvements wherein:

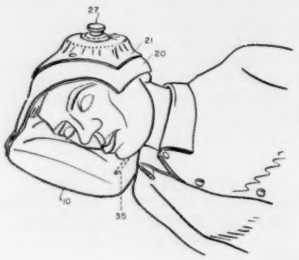
said split ring has self supporting back and side portions for sitting horizontally on a horizontal support in an upright position and extending from the support upward a substantial distance to partially encircle and position the infant in an upright sitting position, said back portion having weight means therein to ensure that said split ring sits erect on said horizontal support, the tops of said arms being substantially flush with the tops of said side portions, and said arms having a substantially smaller vertical thickness than said side portions forming a single continuous open space under said arms at the front of said split ring when sitting erect on said support for receiving the legs of the infant, said split ring being substantially thicker horizontally than the arms of the infant for providing cushioned arm and hand rests for the infant, and said arms of said split ring having overlapping front end portions on which complementary fasteners are affixed for releaseably attaching said arms together overlapping one another at the front to close the ring snugly around the sitting infant and normally preventing the infant from leaving the ring.

3,840,917
FOLDABLE BED GUARD RAIL
Harry E. Taylor, Ingalls St., Clifton Forge, Va. 24422
Filed June 20, 1973, Ser. No. 371,688
Int. Cl. A47c *21/00*
U.S. Cl. 5—331 **4 Claims**



1. A foldable side guard rail assembly for beds comprising, in combination: a pair of spaced mounts for engaging the bed; a pair of parallel posts, each associated with a respective one of said mounts; a pair of pivot bars, each of said pivot bars at one end being rigidly connected to a respective one of said posts at the lower end thereof and extending in a perpendicular direction from said respective post; pin means pivotally connecting each of said pivot bars at the other end thereof to a respective one of said mounts so that each of said posts is pivotally connected with a respective one of said mounts; at least one rail connected between said posts so that said posts are interconnected and being pivotally secured therewith at locations above the lower ends of said posts; said posts being simultaneously pivotable between a first vertical position and a second folded substantially horizontal position while said rail maintains a substantially horizontal orientation during the pivoting of said posts and said pivot bars assuming a horizontal position upon positioning of said posts in their vertical position; spacer means disposed between said rail and said posts for horizontally offsetting said rail with respect to said posts to prevent a person's fingers grasping said rail from being caught between said rail and said posts when said posts are pivoted into said folded position; limiting means preventing said posts from moving beyond the vertical position when said posts are pivoted from their second position to their vertical position; locking means for releasably locking said posts in their vertical position, said locking means including a lever pivotally mounted on one of said mounts and said lever having two sections approximately perpendicularly arranged with respect to each other, said first section when said lever is in a first position being operatively engaged with the bottom of the respective pivot bar at a position spaced from said pin means when said posts are in a vertical position so as to prevent downwward movement of said pivot bar thereby preventing movement of said posts, and said lever being capable of being pivoted into a second position when a force is applied in a downward direction to said second section of said lever for enabling pivotal movement of said posts to occur; and bias means for resiliently biasing said lever into its first position.

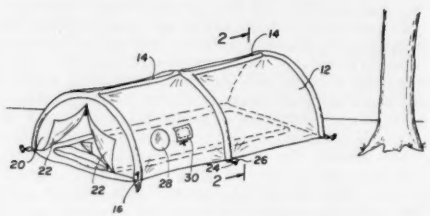
3,840,918
THERAPEUTIC PILLOW
Robert C. Shave, 33 Sutton, S.W., Grand Rapids, Mich. 49507
Filed May 24, 1973, Ser. No. 363,750
Int. Cl. A47g 9/00; A61f 7/04
U.S. Cl. 5—338 2 Claims



1. A pillow including a covering envelope and resilient material enclosed within said envelope, said envelope having a flap secured thereto, wherein the improvement comprises: a plurality of resilient materials enclosed within said envelope, and relatively disposed symmetrically about a center plane through the edges of said pillow to provide substantially increased support along one edge of said envelope, and

said flap having a pocket adapted to receive temperature-establishing means, said flap also being secured to said envelope at a position remote from said edge.

3,840,919
COMBINED SLEEPING BAG AND INFLATABLE TENT
Kenneth Middleton, White Rock, B.C., Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed June 8, 1973, Ser. No. 368,022
Int. Cl. A47g 9/00
U.S. Cl. 5—343 1 Claim



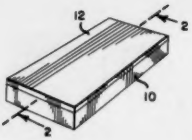
1. In combination:

a sleeping bag;

a partially detached flexible inflatable cover for said bag, the cover forming a tent with the bag disposed therein and when inflated defining a horizontal hollow half cylinder closed at each end with the flat side of the half cylinder serving as the bottom of the tent, the bottom the bag being secured to the inner surface of the flat side, at least one of the closed ends containing sealable flaps which can be opened to function as a door; and

flexible loops secured to the cover and extending outside of the cylinder, said loops being arranged to receive stakes which when driven into the ground hold the tent in place.

3,840,920
ADJUSTABLE MATTRESS FOR PREGNANT MOTHERS
Walter Daniel Voelker, 950 Wellington Rd., Elkins Park, Pa. 19117
Filed Jan. 24, 1972, Ser. No. 220,125
Int. Cl. A47c 27/08
U.S. Cl. 5—348 WB 8 Claims



1. A structure consisting essentially of the combination of:

a. a flexible envelope having walls of a sheet material of relatively slight stretchability that are sufficiently free of pores as to retain the contents of the envelope, said envelope comprising at least one compartment

b. a flowable substantially non-resilient material having thixotropic properties filling the envelope

c. a means for controlling the flowability of the flowable material whereby the flowable material locks in position and does not flow when the desired shape of the flowable material has been obtained

d. a sheet of resilient material interposed between the flowable material and the body to be supported by the structure.

3,840,921
WATER BED AND SUPPORT THEREFOR
Richard A. Labianco, 1745 N. Allen, Pasadena, Calif. 91104
Filed Mar. 7, 1973, Ser. No. 338,749
Int. Cl. A47c 27/08
U.S. Cl. 5—348 WB 11 Claims

1. A water bed comprising

a flexible water-filled bladder having a top surface for supporting a user of the bed, and a bottom surface having a central portion and a peripheral portion; and

a support structure, on which the bladder removably rests, for supporting the bottom surface of the bladder, the support structure having a generally planar lower support member for supporting the central portion of the bladder bottom surface, and a peripheral support member extending around the outer portion of the lower support member for supporting the peripheral portion of the bladder bottom surface,

the peripheral support member having an inclined bladder-supporting top surface which extends upwardly and outwardly at an angle of less than 45° relative to the horizontal to an outer portion of maximum elevation located above the plane of the lower support member and extending essentially continuously around the peripheral portion of the bladder bottom surface,

the bladder being supported by the peripheral support member such that a water-filled peripheral portion of the bladder rests upon the top of said outer portion of maximum elevation to maintain the body-supporting top sur-

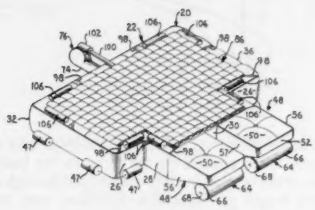
face of the bladder in a generally planar position spaced above said portion of maximum elevation to provide fluid support for the user of the bed extending essentially continuously above and around the outermost portion of the bed support structure.

3,840,922

LANDING CUSHION FOR FALLING OBJECTS

Richard L. Morrison, and Venard C. Webb, both of Salina, Kans., assignors to Thermo-Flex, Inc., Solina, Kans.

Filed Nov. 3, 1972, Ser. No. 303,324
Int. Cl. A47c *27/08*
U.S. Cl. 5—350 **16 Claims**



1. A device for decelearating a person falling from an elevated height comprising:

a hollow, flexible, inflatable first body disposed within the path of travel of said person and adapted to have a gas pressure,

said first body including a supported surface and a first surface in opposed spaced apart relationship transversely of said path; and

a hollow, flexible, inflatable second body independent of the first body, disposed on said first surface and adapted to have a gas pressure at least three times the gas pressure in said first body,

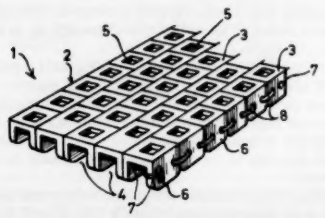
said second body including an impact surface and a second surface in opposed spaced apart relationship and independent of said supported surface and said first surface; whereby when a person impacts on said second body the impacting force is distributed over a relatively large area thereby decreasing the pressure needed in the first body to complete decelearation of the person.

3,840,923

VENTILATING COVER OR MAT

Jan Bos, Gratamastraat, 53, Groningen, Netherlands

Filed June 27, 1973, Ser. No. 374,227
Claims priority, application Netherlands, June 27, 1972, 7208819
Int. Cl. A47c *23/00*
U.S. Cl. 5—354 **8 Claims**



1. A mat for a mattress, the mat being intended to support a human body above the mattress so as to allow ventilation between the body and mattress, the mat comprising:

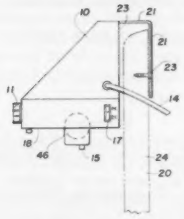
a. a plurality of polyhedral elements, each element having:
   I. a substantially flat, polygonal upper surface,
   II. a channel beneath said upper surface and extending between two side faces of said element, and
   III. a connecting hole between said upper surface and said channel, and
b. a flexible connecting member for binding said elements together into a unitary assembly, said channel in each element communicating with channels in adjacent elements, and said upper surfaces of said elements being contitious to form a substantially continuous mat surface.

3,840,924

COMBINATION CLOCK, BED LAMP, RADIO AND TAPE PLAYER

Frank Hamilton, 248 Frederick St., Apt. 2, Detroit, Mich. 48202

Filed Apr. 19, 1973, Ser. No. 352,436
Int. Cl. A47c *21/00*
U.S. Cl. 5—317 R **1 Claim**



1. An accessory for mounting on the headboard of a bed which includes a digital reading clock, an AM-FM radio, and a tape player, together with a fluorescent lamp which is mounted on the lower surface of the device in the conventional mounting position of the device, said device being fitted with brackets so as to fasten across the top and behind the back of a headboard of a conventional bed, the said mounting brackets being of a U-shaped configuration, with one section of the mounting bracket running parallel to the top face of the device and with the other section of the bracket mounted at right angles to the first section so as to run parallel to the back surface of the device, and separated from the back surface of the device by the width of a conventional headboard,

each said brackets fitted with holes so that it may be permanently fastened to the back of a headboard of a bed.

3,840,925

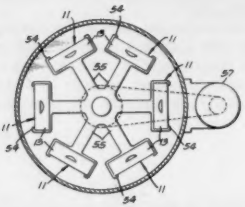
METHOD OF RECOVERING HONEY FROM ARTIFICIAL HONEYCOMBS

Kenneth F. Croan, 2165 N. Grand Oak, Altadena, Calif. 91001

Division of Ser. No. 107,950, Jan. 20, 1971, Pat. No. 3,758,896. This application Feb. 26, 1973, Ser. No. 335,777
Int. Cl. A01k *47/00*
U.S. Cl. 6—2 R **5 Claims**

1. That method of collecting and recovering honey from bees which comprises: equipping the supers of a beehive with a plurality of closely spaced artificial honeycombs each having a multiplicity of preformed honey receiving cells opening through its opposite vertically disposed faces, removing the honey filled supers to a honey recovery station, preheating said supers and honeycomb to soften the beeswax caps of said

preformed cells, and centrifuging said supers without removing the honeycombs from said supers thereby to extract the

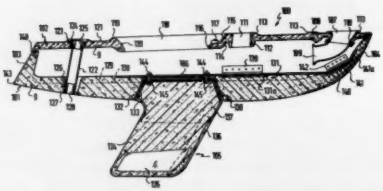


honey from said cells while leaving said preformed honey receiving cells intact.

3,840,926
BOAT HULL

Helmut Stoeberl, 8201 Eggstaett-Bachham, Germany

Filed Jan. 12, 1973, Ser. No. 323,319
Claims priority, application Germany, Jan. 12, 1972, 2201319
Int. Cl. B63b 5/24
U.S. Cl. 9—6 **13 Claims**



1. A plastic boat body which comprises a molded plastic boat shell, an inner bottom shell in said boat shell and secured around its periphery to the boat shell, said boat shell and inner bottom shell providing a chamber therebetween, an insitu cast hard foam plastic core filling said chamber in full conformity therewith, fiber lamination sheets integrally bonded to and covering the faces of the boat shell and inner bottom defining said chamber, plastic from the boat shell and inner bottom shell being embedded in interstices of said fiber lamination sheets, and fibers of said laminations sheet surrounded by the cast foam plastic core and embedded therein in locked relation therewith to integrally bond the foam plastic core to the boat shell and inner bottom.

3,840,927
SWIVEL UNIT FOR MOORING AND CARGO TRANSFER SYSTEM

William R. Reid, Jr., Northridge, Calif., assignor to Imodco, Inc., Los Angeles, Calif.

Filed Apr. 27, 1973, Ser. No. 355,069
Int. Cl. B63b 21/52
U.S. Cl. 9—8 P **6 Claims**

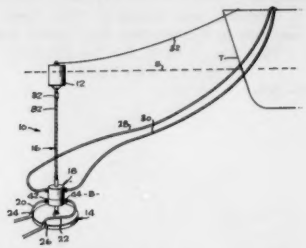
1. In a mooring and cargo handling system which includes a floating buoy to which ships can be tied, a mooring foundation on the sea floor to which the buoy can be secured, and a cargo conduit extending along the sea floor for carrying cargo between the ship and a shore installation or the like, the improvement comprising:

a cargo swivel unit having first and second swivel sections rotatably connected to each other to rotate about a vertical axis, said swivel sections being hollow along said axis;

first conduit means for coupling the first swivel section to the conduit that extends along the sea floor;

second conduit means for coupling the second swivel section to the ship; and

tension means connecting the buoy to the base and including a tension bypassing portion extending along the hollow region at said vertical axis between positions below

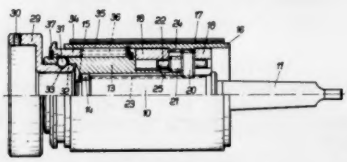


and above the swivel unit to carry substantially the entire tension force applied by the buoy to the base, so that none of the tension force is transmitted through an appreciable length of either swivel section, said first swivel section being fixed to said tension bypassing portion to prevent relative sliding and relative rotation between them.

3,840,928
TOOL HOLDER FOR LATHES

Gerhard Beck; Richard Beck, both of Dettingen/Erms; Alfred Muller, Esslingen-St. Bernhard; Hermann Muller, Dettingen/Erms, and Eberhard Gluck, Riederich, all of Germany, assignors to Lechler Apparatebau KG, Stuttgart, Germany

Filed June 1, 1973, Ser. No. 366,061
Claims priority, application Germany, June 3, 1972, 2227194
Int. Cl. B29k 1/56; B23b 29/00; B23q 1/00
U.S. Cl. 10—89 H **9 Claims**



1. An apparatus for supporting a thread cutting tool on a lathe and for connecting to a tail stock of said lathe opposite chuck means of said lathe adapted to receive a work piece and to rotate it about an axis of rotation, comprising, in combination:

connecting means removably coupling said apparatus to said tail stock including elongated exle means;

holding means adapted for holding said cutting tool opposite the position of said work piece supported by and disposed rotatably concentrically with said axle means, and operable to be displaced longitudinally to said axle means;

gripping means rotatable about said axle means and operable to be displaced longitudinally with respect to said axle means; and

planetary gear means putting in driving connection said axle means, said holding means, and said gripping means whereby rotational forces applied to said holding means

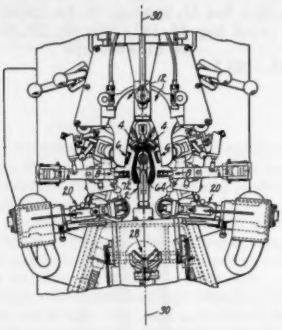
are transmitted to said gripping means at a reduced level and the absence of a restraining force on said gripping means permits said holding means to rotate in response to rotational forces applied thereto.

3,840,929

PULLING AND LASTING MACHINES

Derek H. Garner; George H. Bosworth, and Roger M. Barker, all of Leicester, England, assignors to USM Corporation, Boston, Mass.

Filed Nov. 22, 1972, Ser. No. 308,694
Claims priority, application Great Britain, Nov. 23, 1971, 54301/71
Int. Cl. A43d 21/00
U.S. Cl. 12—10.1 3 Claims



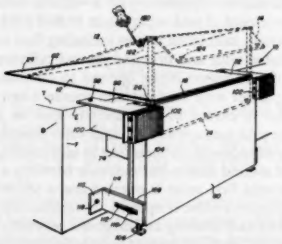
1. In a machine for forming a shoe upper about a last having means for tensioning the upper heightwise over the last, said tensioning means including grippers for gripping the side margin of the upper, means for moving the grippers heightwise to tension the upper, means for moving the grippers inwardly widthwise of the last, and means for swinging the grippers about an axis extending substantially heightwise of the shoe for twisting the tensioned upper as it is moved inwardly to conform the tensioned upper generally with a peripheral edge contour of the last.

3,840,930

DOCKBOARD

Robert E. Wanddell, P.O. Box 4174, Charlotte, N.C. 28204

Filed Mar. 10, 1972, Ser. No. 233,508
Int. Cl. B65q 11/00
U.S. Cl. 14—71 7 Claims



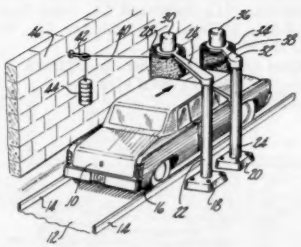
1. A dockboard for use on a loading dock to provide a ramp between the dock and the platform of an adjacent vehicle, said dockboard comprising a flat dock plate disposed on the top of the dock with an outer end portion extending generally along an edge of the dock and an inner end portion supported freely on the top of the dock inwardly of the dock edge, means mounted on the vertical face of the dock below and pivotally connected to said dock plate outer end portion to guide movement thereof in a substantially vertical path above the top of the dock while allowing pivoting of the dock plate thereat so that said inner end portion of the dock plate will remain supported on and will slide along the top of the dock during vertical movement of the outer end portion, and a lip plate hingedly depending from said dock plate outer end portion along a horizontal hinge axis for hinged pivoting of said lip plate therealong with respect to said dock plate outer end portion with the upward hinged pivoting being limited to cause said dock plate and lip plate to form a continuous load supporting span throughout their combined extent from a vehicle platform to the dock top, said dockboard being movable from an inoperative position wherein the dock plate is flat on the dock top and the lip plate hangs vertically downward along said vertical face of the dock to an operative position at which the outer end portion of the dock plate has been raised vertically with the inner end portion remaining supported on the dock top, the lip plate have been pivoted upwardly above the platform of an adjacent vehicle and the dockboard then lowered with the inner end portion remaining supported on the dock top to dispose the lip plate on the vehicle platform with the lip plate pivoted upwardly to the limit of upward pivoting, whereby said lip plate and dock plate provide the aforesaid continuous load supporting span.

3,840,931

DRIVE THROUGH CAR WASH WITH DOUBLE PIVOTED SPRING CONNECTED SIDE BRUSH ARRANGEMENT

David J. Bivens, Danville, Va., assignor to Bivens Winchester Corporation, Ann Arbor, Mich.

Filed Sept. 26, 1973, Ser. No. 400,787
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 8 Claims



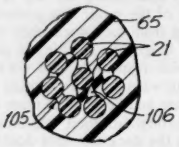
1. Vehicle washing apparatus of the type for washing the vertical surfaces of a vehicle in a wash lane comprising: a first substantially vertical brush pivotally mounted in the wash lane for displacement across the lane, a second substantially vertical brush pivotally mounted in the wash lane and normally closed adjacent the first brush for displacement across the lane, first biasing means resiliently urging the brushes toward one another, second biasing means resiliently urging the brushes toward a rest position on one side of the wash lane where the first brush engages a side surface of a vehicle in the wash lane and approaching the brushes and the second brush engages the front surface of the vehicle, and means for producing relative displacement between the vehicle and the brushes to cause the vehicle to separate and pass between said brushes.

3,840,932

ULTRASONIC TOOTHBRUSH APPLICATOR

Lewis Balamuth, Southampton; Michael R. Rutten, East Islip, and Robert Meyer, Huntington Station, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,430
Int. Cl. A46b 9/04, 13/02
U.S. Cl. 15—167 R 34 Claims



1. A toothbrush adapted to be mounted on an automatic toothbrush power handle having as a power source a source of vibratory energy in the ultrasonic range, the said toothbrush comprising:

A. an elongated plastic brush portion adapted at one end to be removably mounted on the power handle and of a length greater than one wave length of a longitudinal elastic wave in the plastic brush portion medium at the operating ultrasonic frequency of said toothbrush;

B. a plastic brush head formed integrally with the elongated brush portion at the opposite end thereof, said brush head being provided with a series of apertures for respectively receiving an end of each bristle cluster; and

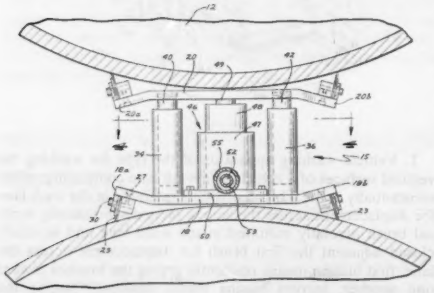
C. a plurality of bristle clusters each including a plurality of bristle elements, disposed on the brush head within said apertures, said plastic brush head constituting a loaded longitudinal wave transmission line, wherein the bristle clusters coincide with the loaded parts of said loaded transmission line, and where such loaded locations are essentially at loops of longitudinal vibration.

3,840,933

SCRAPING APPARATUS FOR ROLLERS

Albert J. Schwab, 1612 Hollywood Ct., Saint Paul, Minn. 55108, and Altin J. Olson, 10445 5th Ave. Cir., Bloomington, Minn. 55420

Filed Aug. 27, 1973, Ser. No. 392,099
Int. Cl. B41f 9/10
U.S. Cl. 15—236 3 Claims



1. A scraping apparatus to be disposed between a pair of paper mill rollers having in combination

a pair of vertically spaced plate members having opposed end portions,

a scraping blade member carried at each of said end portions,

means disposed between said plate members holding said plate members in aligned vertical relationship,

means disposed between said plate members moving said blade members into operating engagement with the adjacent surfaces of a pair of said rollers,

said first-mentioned means comprises

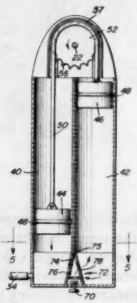
a pair of sleeves carried by one of said plate members, and a pair of posts carried by the other of said plate members respectively received into said sleeves and movable relative thereto.

3,840,934

VEHICLE HEADLAMP WIPER ASSEMBLY

Arthur P. Bird, Box 24, Stollings, W. Va. 25646

Filed Aug. 17, 1972, Ser. No. 281,509
Int. Cl. B60s 1/10
U.S. Cl. 15—250.3 7 Claims

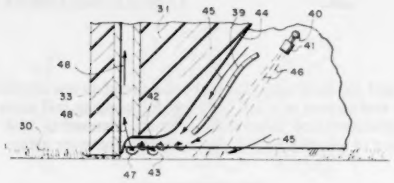


1. A vehicle headlamp wiper assembly comprising a housing, a drive shaft rotatably supported by said housing, a wiper blade affixed to said drive shaft for rotation therewith, first and second cylinders associated with said housing, first and second pistons reciprocably mounted in said first and second cylinders respectively, power transmission means drivingly connecting said first and second pistons to said drive shaft for imparting rotation thereto upon reciprocation of said pistons, and valve means associated with said cylinders and operatively connected to said drive shaft for alternatively communicating said first and second cylinders with a vacuum source in response to movement of said wiper blade to said predetermined angular positions, said valve means including first and second valves associated with said first and second cylinders, respectively, one of said valves being opened to communicate the associated cylinder with said vacuum source when the other of said valves is closed to substantially seal its associated cylinder from said vacuum source, said valve means including an actuator rod reciprocally mounted in said housing between said first and second valves and movable between a first position wherein said first valve is opened and a second position wherein said second valve is opened, an oscillatable actuation shaft carried by said housing and disposed generally normal to said actuator rod, first lost motion connecting means including a first lost motion connection between said drive shaft and actuation shaft, and second lost motion connection means including a second lost motion connection between said actuation shaft and said actuator rod.

3,840,935
CARPET CLEANING MACHINE

Mack A. Fitzgerald, Jr., Plano; Carl W. Scott, and Carl W. Scott, Jr., both of Euless, all of Tex., assignors to Rolling Systems, Inc., Euless, Tex.

Filed Mar. 16, 1972, Ser. No. 235,157
Int. Cl. A47l 7/00
U.S. Cl. 15—322 1 Claim



1. Apparatus for continuously and simultaneously applying a cleaning liquid to a carpet, effecting cleaning action by the liquid upon the carpet, and removing cleaning liquid carrying carpet soil from the carpet comprising:

a generally rectangular housing presenting a downwardly open face to the carpet to be cleaned, said housing having means for translating it across said carpet in a direction parallel to its sides, and transverse to its ends;

partition means within said housing extending across its direction of translation dividing the interior of the housing into a first compartment for cleaning liquid application and a second compartment for cleaning liquid removal, the lower edge of said partition means being spaced above the carpet surface to establish a zone of turbulent air movement and vigorous liquid cleaning action adjacent said lower edge;

the surface of said partition means facing said first compartment defining an angle with the carpet between about 40° and about 50°;

means for admitting air into said first compartment;

means in said first compartment for directing a spray of cleaning liquid against the carpet, said spray directing means being mounted to project cleaning liquid toward said carpet in a direction generally parallel to the surface of said partition means;

a vane in said first compartment mounted at an angle to the carpet between about 40° and about 50°, and positioned to be spaced from, but between, the path of projected cleaning liquid established by said spray direction means, and the surface of said partition means facing said first compartment;

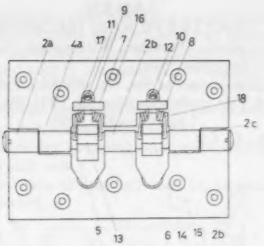
and means for connecting said second compartment to a source of vacuum.

3,840,936
HINGE

Jutaro Sato, Yokosuka, Japan, assignor to Yutaka Tanaka and Yoshio Kimura, Ibaraki-ken, Japan

Filed Sept. 25, 1972, Ser. No. 291,630
Int. Cl. E05d 11/08; E05f 1/08
U.S. Cl. 16—76 1 Claim

1. An integral hinge and hinge stop device for holding doors and the like having hinge pintles, comprising a fixed hinge leaf and a movable hinge leaf having joining knuckles pivotally connected to said hinge pintle, a plurality of cams fixed to said pintle, each having a different curved surface, a plurality of springs rigidly secured to the movable leaf intermediate the ends of said springs and a roller means or cam follower attached to each of the spring ends and positioned to move along the curved surfaces of the cams, said cams, said springs

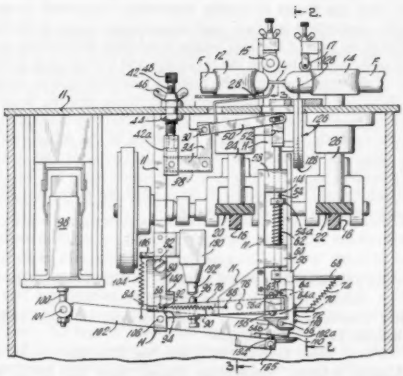


and said roller means coacting to control the movement of the movable leaf.

3,840,937
SEPARATOR MECHANISM WITH CUTTER SENSOR FOR LIGATURE CONNECTED FRANKFURTERS

Rudolph Berg, Nutley; Otto Bantel, Union, and Howard D. Taylor, Morristown, all of N.J., assignors to Linker Machines, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 260,019, May 24, 1972, abandoned, which is a continuation of Ser. No. 105,442, Jan. 11, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,018
Int. Cl. A22c 11/00
U.S. Cl. 17—1 F 33 Claims



1. A separator mechanism for a ligature-connected line of frankfurters, sausages or the like comprising means for moving said line through a ligature sensing area and a separating area, said sensing area including a sensing device having a feeler for contacting the frankfurters, said moving means causing each ligature between successive frankfurters to be stretched in said separating area, a solenoid driven cutting mechanism, a linkage connecting said feeler to operate a switch controlling said solenoid, said linkage including a switch operating arm and, between the feeler and arm, a link shiftable between a first position to connect said feeler and arm whereby movement of said feeler causes operation of said switch and a second position in which said link disconnects said feeler and operating arm and means preventing movement of said link from said second to said first position until

said feeler has moved to a greater extent than a predetermined minimum.

3,840,938

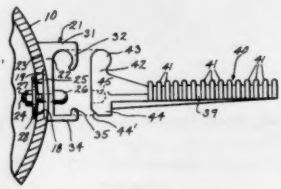
POULTRY PICKING MACHINES

Franklin J. Carlson, Okauchee, Wis., assignor to C & C Products, Inc., Pewaukee, Wis.

Continuation-in-part of Ser. No. 800,845, Feb. 20, 1969, abandoned. This application Mar. 23, 1971, Ser. No. 127,175

Int. Cl. A22b *3/08*

U.S. Cl. 17—11.1 R **14 Claims**



1. In a machine having a finger-holding surface, a plurality of pairs of spaced outwardly projecting mounting legs carried by said surface, with each pair presenting a top access opening therebetween which is spaced outwardly from the holding surface, a flexible finger interfitting between each pair of legs, each of said fingers having a resilient base portion at one end thereof with length and width dimensions, said length dimension being greater than the corresponding dimension of said access opening, and cooperating means on said base portion and legs for removably receiving and holding a base portion between each pair of legs whereby said base portion of a finger may be inserted through the access opening from the outside only and the finger is readily removably supported in outwardly projecting position, said cooperating means including a flange on one of the legs which overhangs the holding surface and projects toward the other leg, and a projection at one end of the base portion of the finger which is shaped to snugly fit the space between the overhanging flange and the holding surface when inserted angularly from the top through the access opening, there being a projection at the other end of the base, and means on the other leg for receiving and releasably holding said last-mentioned projection when the latter is pressed toward the holding surface after the first-mentioned base projection has been engaged.

3,840,939

METHOD AND APPARATUS FOR CUTTING AND REMOVING RED MEAT OF FISH BODIES

Norio Yamanashi, Shimizu, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

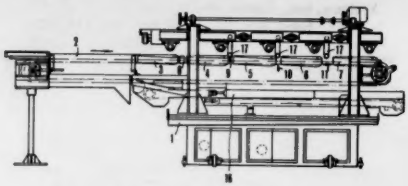
Filed Feb. 2, 1972, Ser. No. 222,728

Claims priority, application Japan, May 11, 1971, 46-31365; May 11, 1971, 46-31366; May 11, 1971, 46-37582; May 11, 1971, 46-37583

Int. Cl. A22c *29/00*

U.S. Cl. 17—52 **11 Claims**

1. Apparatus for automatically cutting and removing the red meat portion of a fish body, comprising conveyor means for successively conveying longitudinally split sections of a fish body, red meat removing means located on one side of said conveyor means and including a pair of upper and lower knife blades for cutting and removing said red meat, wherein said upper knife blade is inclined downwardly and said lower knife blade is inclined upwardly, and a plurality of cam means, one for each said knife blade, for displacing said knife blades with respect to said red meat in accordance with the configuration thereof, each cam means including a first cam for adjusting the inclination angle of its respective knife blade, a second cam for adjusting the cutting depth of its respective knife blade, and a driving mechanism for said first and second cams, wherein said driving mechanism includes means for varying the rotary speeds of said cams in accordance with the length



of said red meat such that said cams complete one revolution for said section of a fish body and for stopping said cams for a predetermined interval in a timed relationship with the speed of said fish body sections on said conveyor means.

3,840,940

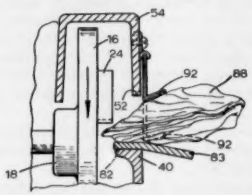
OYSTER BREAKER

Charles D. Briddell, 335 Hill-N-Dale Dr., York, Pa. 17403, and John W. Thompson, Box 356 R.D. No. 1, Mount Wolf, Pa. 17347

Continuation-in-part of Ser. No. 267,010, June 28, 1972, abandoned. This application Oct. 13, 1972, Ser. No. 297,346

Int. Cl. A22c *29/00*

U.S. Cl. 17—74 **11 Claims**

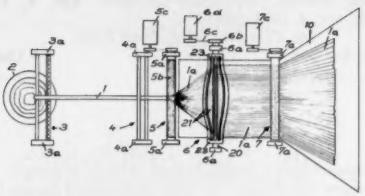


1. A power-operated oyster breaker comprising in combination a housing having an entrance opening in a substantially vertical wall thereof, stationary support means disposed normally in a substantially horizontal plane in use adjacent said opening to support the lip end of an oyster when positioned upon said support means substantially horizontally and projected through said opening, a disc-like breaking member supported for rotation within a substantially vertical plane and having one face movable adjacent an edge of said support means about a substantially horizontal axis, said face being arranged to serve as a stop surface engageable by the lip end of an oyster to limit the extent to which an oyster may be inserted through said entrance opening, power means operable to rotate said breaking member about the axis thereof, said breaking member having at least one projection extending from said one face thereof and cooperable in shearing relationship with said edge of said support means to chip said lip end of an oyster to form an opening adapted to receive a severing member by which the abductor muscle of an oyster may be severed from the shell to permit ready opening of the oyster to obtain the bivalve mollusk therefrom, and a guard member positioned relative to said opening and movable away from said opening incident to insertion of one end of an oyster through said opening for engagement by said breaking member, said guard being operable to prevent accidental entry of the hand or finger of an operator through said opening.

3,840,941
METHOD AND APPARATUS FOR MAKING A LAP OF FIBRES

Jean-Louis Neveu, Villeurbanne, France, assignor to Centre Technique Industriel dit: Institut Textile de France, Boulogne, France

Filed July 28, 1972, Ser. No. 275,967
Claims priority, application France, July 30, 1971, 71.28169
Int. Cl. D01d 11/02
U.S. Cl. 19—65 T 18 Claims



1. Method of manufacturing a lap of fibres from a sliver of continuous chemical fibres comprising the following steps:

continuously feeding said sliver from a pair of inlet rollers to a pair of outlet rollers while controlling the peripheral speeds of said rollers so as to maintain said fibres in said sliver under tension sufficient to stretch the fibres intermediate said inlet and outlet rollers,

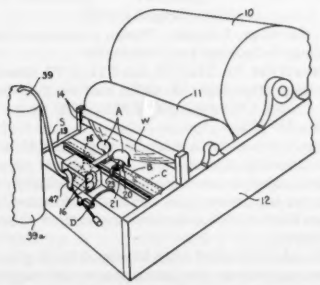
between said inlet rollers and said outlet rollers, additionally tensioning said fibres as they are fed from said inlet to said outlet rollers by intermittently applying forces thereto directed not only transversely to the direction of feed but also in a plurality of divergent directions extending at angles to each other whereby the fibres are vibrated and spread apart and the sliver is curved in a cross-section transverse to said direction of feed and at the portion thereof subjected to said forces, and

directing air under pressure on said fibres after they have passed said inlet rollers.

3,840,942
WEB CONTROL APPARATUS

Walter A. Thomason, Jr., 347 Ridgewood Ave., Charlotte, N.C. 28209

Filed Jan. 31, 1973, Ser. No. 328,267
Int. Cl. D01g 15/46
U.S. Cl. 19—150 7 Claims



1. In a carding machine having a web delivery means carried adjacent a doffer and roll means receiving the web therefrom, the improvement comprising a web control apparatus interposed between said web delivery means and said roll means including:

A. a pair of spaced guides; one on each side of the web;

B. means positioning said guides in a first predetermined fixed position out of condensing engagement with the web;

C. means positioning said guides in a second predetermined fixed position closely adjacent said web delivery means, said roll means pulling the web through the guides condensing said web in a substantially T-shaped configuration;

D. power operated means moving said guides from said first position to said second position; and

E. switch means for actuating said power operated means delivering said web;

whereby the fibers of said web may be condensed into a cohesive strand.

3,840,943
REVERSIBLE LOCKING PAPER CLIP

John D. Langwell, 28 Branch Ave., Freeport, N.Y. 11520

Filed Jan. 29, 1973, Ser. No. 327,728
Int. Cl. B42f 1/02
U.S. Cl. 24—67.9 7 Claims

1. A locking paper clip comprising a single continuous length of wire having a plurality of bends to define two overlapped sections extending from a common base, each section being of U-shape and including substantially parallel legs, one of the legs of each section extending from said common base, the other of the legs of each section extending between the legs of the other section and parallel thereto, one of said sections being longer than the other such that said other leg of said one section is longer than said other leg of the other section, each of said other legs having ends with bent portions forming an angle with said other legs in two directions said one section defining a plane for said clip, said bent portions extending in divergent fashion from said plane of the clip, and extending convergently towards one another in the direction of said base within the plane of the clip, such that in a first position of the clip, sheets of material can be freely inserted between the legs of said sections whereafter the clip can be turned to cause the free ends of said bent portions to grip said sheets and prevent withdrawal thereof from said clip.

3,840,944
ACCESSORY ATTACHING DEVICE

James E. Gresley, 4115 Hessen Cassel Rd., Fort Wayne, Ind. 46806

Filed May 14, 1973, Ser. No. 360,003
Int. Cl. A44b 21/00; B60r 9/04
U.S. Cl. 24—73 R 4 Claims

1. An accessory attaching device for use with an archery bow or the like comprising a stationary member and a movable member, there being a first recess in one of said stationary and said movable members, the other of said members including a slide portion dimensioned to be slidably received in said first recess, means for fixedly securing said stationary member to an archery bow or the like, detent means for resiliently coupling said slide to said stationary member, mounting means fixedly secured to said movable member for mounting

an accessory thereto, said one member including opposite ends, said first recess extending between said ends and having a bottom surface and a pair of flange portions partially overlying said recess, said flange portions defining a slot therebetween, said slide portion being slidably received between said bottom surface and said flange portions, said slide portion having a thickness less than the vertical dimension between said flange portion and said bottom surface, said slide portion being made of a resiliently flexible material and being bowed

such that, when said slide portion is fully received in said first recess, the opposite ends thereof engage said flange portions and a portion thereof between said ends engages said bottom surface, said detent means including a second recess in one of said bottom surface and slide portion and a nub in the other of said bottom surface and said slide portion, said nub being located to register with said second recess when said slide is fully received in said first recess.

3,840,945

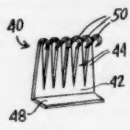
GRIPPING FASTENING SURFACE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Division of Ser. No. 857,075, Sept. 11, 1969, Pat. No. 3,710,425. This application Dec. 1, 1972, Ser. No. 311,300

Int. Cl. A44b *17/00*

U.S. Cl. 24—204 **4 Claims**



1. A multi-element self-gripping fastening surface for releasably connecting together a pair of articles, said fastening surface comprising a resilient fastening assembly secured to a surface of at least one article to be releasably connected to an opposing article, said fastening assembly including a flat mounting strip and a plurality of elongated flat filaments formed integrally with said mounting strip and upstanding perpendicularly therefrom in a linear row along a longitudinal edge of said mounting strip, each of said filaments having opposed flat surfaces and a terminal hook at the free end thereof, said hook being bent perpendicularly to the plane of said flat surfaces, the body of each of said filaments having a molecular alignment in a direction parallel to the longitudinal axis of said body, said mounting strip being secured flat against the surface of said one article with said terminal hooks of said filaments exposed above said article surface to form said self-gripping fastening surface, and positioned to engage and grip a confronting surface of said opposing article when the latter is pressed against said self-gripping surface.

3,840,946

SLIDE FASTENER WITH COUPLING COILS ON KNITTED TAPES

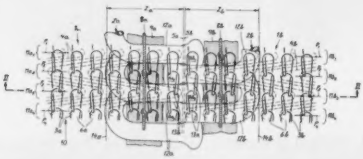
Alfons Frohlich; Marie-Luise Cappel, both of Essen, and Ernst Stubiger, Giessen, all of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Continuation-in-part of Ser. Nos. 82,323, Oct. 20, 1970, Pat. No. 3,757,541, and Ser. No. 82,326, Oct. 20, 1970, Pat. No. 3,762,002. This application Apr. 23, 1973, Ser. No. 353,771

Claims priority, application Germany, Apr. 4, 1970, 2016139; Apr. 4, 1970, 2016145

Int. Cl. A44b *19/10*; **D04b** *23/12*

U.S. Cl. 24—205.1 C **7 Claims**



1. A slide-fastener half comprising:

a stringer tape with a warp-knitted basic pattern of longitudinally extending wales paralleling an edge of said tape, said pattern further including laid-in weft threads interlinking said wales and zig-zagging in elongate interleaved undulations across said basic pattern, each undulation spanning a plurality of wales, the undulations of each weft thread pointing alternately toward and away from said edge whereby a multiplicity of courses transverse to said edge are defined by the vertices of respective sets of interleaved undulations, a marginal zone of said tape adjacent said edge being free of undulations with vertices pointing away from said edge whereby alternate courses, forming part of a first and a second group, terminate at said edge and at an inward boundary of said marginal zone, respectively;

a coil overlying said marginal zone and extending alongside said edge, said coil having turns registering with respective courses of said first group, said turns being provided with coupling heads; and stitching securing said coil to said tape, said stitching passing through said marginal zone between wales thereof at weft-free portions of said zone in line with respective courses of said second group.

3,840,947

GABION CONNECTOR

George W. Burbidge, Edmonds, Wash., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Continuation of Ser. No. 242,970, April 11, 1972, abandoned. This application Sept. 18, 1973, Ser. No. 398,486

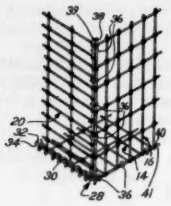
Int. Cl. A47g *5/00*; **A44b** *21/00*

U.S. Cl. 24—261 WL **1 Claim**

1. The improvement in an assembly of gabions of fastening means for fastening adjacent wire mesh panels of gabions together, said adjacent panels including substantially parallel, equal diameter edge wires, said panels all connected to form an enclosure for rock material, said improvement comprising, in combination:

a plurality of closed steel rings loosely extending over said adjacent edge wires of separate panels, said rings spaced at intervals of no more than twelve inches, each of said steel rings being formed from a single length of wire into a substantially elliptical shape with a curved middle portion of the wire length forming one end of the elliptical shape, said one end fitted adjacent one edge wire, the opposite ends of said wire being curved and overlapping

along about 180° of the curve of said ring, said opposite ends fitting about the other of said edge wires at the other narrow end of said elliptical shaped ring, said middle



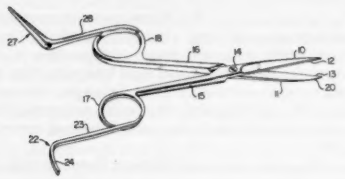
portion and said opposite ends being connected by spaced, substantially parallel, straight runs whereby said edge wires are loosely held in parallel relation.

3,840,948

EMBALMER'S INSTRUMENT

Lewis L. Winfrey, 335 E. Market St., Xenia, Ohio

Filed May 21, 1973, Ser. No. 362,266
Int. Cl. A01n *1/00*
U.S. Cl. 27—21 **3 Claims**



1. A combination instrument for use in the process of embalming comprising

first and second blade members pivotally joined to form a scissors,

said blade members having inwardly facing cooperating cutting edges,

one of said blade members having an outwardly facing independently usable cutting edge;

first and second handle members joined to said first and second blade members;

aneurism needle means attached to said first handle member for withdrawing a vessel from an incision in the body being embalmed, said needle means having a straight portion extending away from said first blade member and terminating in a curved portion curving laterally outwardly away from said second handle member; and

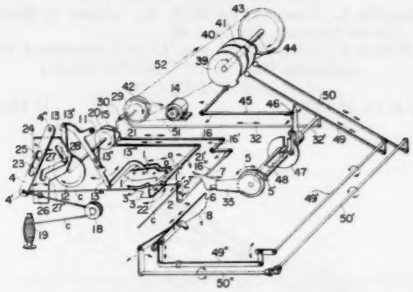
vessel expander means attached to said second handle member for insertion into and enlargement of a vessel, said expander having a tapering substantially conical exterior shape with the smaller end thereof pointing away from said second blade and a curved interior to facilitate insertion of a tube into the vessel.

3,840,949

METHOD AND APPARATUS FOR FORMING VARIEGATING PROJECTING ON A LENGTH OF CLOTH

Imura Yoshihiro, No. 7-4 Nakajimach 4-chome, Muroran-shi, Hokkaido, Japan

Filed May 25, 1973, Ser. No. 363,821
Claims priority, application Japan, May 26, 1972, 47-52284
Int. Cl. D06c *23/00*; **D06q** *1/00*
U.S. Cl. 28—1 R **10 Claims**



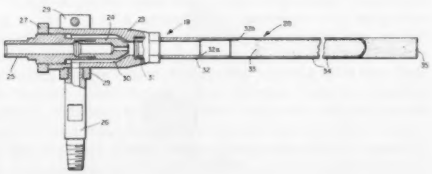
1. A continuous method of forming a series of variegating projections on a length of cloth comprising the steps of, during each forming cycle, moving a thread loop retaining member, having forwardly and rearwardly facing thread retaining formations, forwardly along a guiding path; guiding a binding thread across the guiding path in advance of the thread loop retaining member for engaging the thread therewith to guide the thread into the rearwardly facing retaining formations; guiding the thread into the forwardly facing retaining formations to form a thread loop held in the retaining formations; hooking the rear end of the loop on a cloth catching member to disengage the loop from the rearwardly facing retaining formations as the retaining member continues to move forwardly; feeding a portion of the cloth to the catching member for catching and retaining of a caught cloth projection by the catching member; hooking a front end of the loop on a rotatable body and rotating the body to draw the loop from the forwardly facing retaining formations; releasing the loop from the rotatable body and passing the loop over the caught cloth projection; tensioning the thread to bind the caught cloth projection while retracting the loop retaining member along its guiding path; and repeating the forming cycle.

3,840,950

STRAND TREATMENT APPARATUS

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.

Filed Mar. 22, 1973, Ser. No. 343,644
Int. Cl. D02g *1/20*, *1/12*
U.S. Cl. 28—1.3 **10 Claims**



1. In textile strand-crimping apparatus having an entrance and an exit for such strand and having means laterally confining the strand therebetween including successive entrance,

intermediate, and exit portions, and wherein the entrance portion is provided with jet means for forwarding such strand for compressive crimping in the intermediate portion, the improvement wherein the exit portion comprises a laterally surrounding fine screen, and the intermediate portion increases in cross-sectional area between entrance and exit portions.

3,840,951

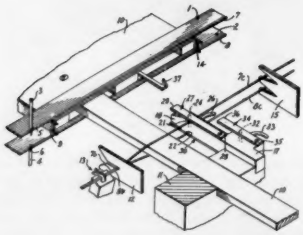
DOUBLE THREAD DETECTOR

Franklin L. Townsend, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Division of Ser. No. 173,852, Aug. 23, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,261

Int. Cl. D03j 1/14

U.S. Cl. 28—43 11 Claims



1. For use with apparatus intended automatically to sequentially separate single threads from a warp sheet of threads of predetermined count, a device for detecting separated plural threads, said device comprising a rigid body, a surface on said body, a notch in said surface, a sensor overlying the surface, means biasing the sensor to a position adjacent the surface, said notch sized to accept beneath the sensor in said adjacent position only one of the separated threads, said sensor held in a position separated from said surface by said separated plural threads between the surface and the sensor.

3,840,952

METHOD AND APPARATUS FOR MAKING EXPANDED METAL SHEETS

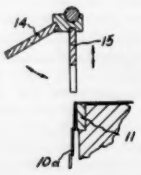
Mark North, New Lambton, N. S. W., Australia, assignor to John Lysaght (Australia) Limited, New South Wales, Australia

Filed Oct. 30, 1972, Ser. No. 301,859

Claims priority, application Australia, Nov. 3, 1971, 6877/71

Int. Cl. B21d 31/02

U.S. Cl. 29—6.2 2 Claims



1. A method of making an expanded metal sheet comprising the steps of stamping successive adjacent strips of a plain metal sheet to sever each strip from the plain sheet except at a plurality of spaced apart positions, and deforming the metal of the strip intermediate those positions characterized in that separate dies of mutually different profile are utilized for each of any two consecutive steps.

3,840,953

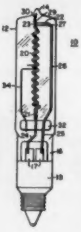
METHOD OF ASSEMBLING A FILAMENT-MOUNT FOR A SINGLE-ENDED INCANDESCENT LAMP

Jack Martin, Paramus, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 260,084, June 6, 1972. This application Apr. 18, 1973, Ser. No. 352,369

Int. Cl. H01j 9/18

U.S. Cl. 29—25.15 5 Claims



1. In the manufacture of a filament-mount assembly for an electric incandescent lamp wherein a coiled-coil filament of refractory metal wire and linear configuration is attached directly to the ends of a pair of rigid lead wires that hold the filament in place within the lamp envelope, the method of mechanically coupling and electrically connecting the filament to one of said lead wires, which method comprises the steps of;

fabricating said coiled-coil filament from a continuous primary winding and providing a depending singly-coiled leg of uniformly-spaced and continuously-wound primary turns at the end of the filament which is to be fastened to said lead wire,

inserting a tool into the free end of said filament leg and manipulating said tool so that the tip thereof bends and permanently displaces a selected primary turn from its as-wound configuration and thereby forms an opening in said leg,

withdrawing said tool from the filament leg,

shaping the end of said lead wire into a generally L-shaped hook which has a transverse arm segment and an upstanding stud segment that are joined by an arcuate bend having a predetermined radius of curvature, said arm segment being joined to the body portion of said lead wire and said stud segment constituting the terminus of said lead wire,

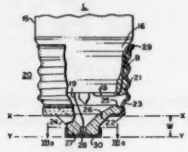
inserting the stud segment of said lead wire hook into the free end of said filament leg and manipulating the lead wire until the stud segment and arcuate bend portion of the hook pass through the opening formed in the filament leg and the arm segment of the hook is disposed within said filament leg, and then

securing said lead wire to a bridge member that is joined to the other lead wire and thus maintains the filament and lead wires in assembled operative relationship.

3,840,954
METHOD OF MANUFACTURING AND ASSEMBLING AN ELECTRIC LAMP BASE

Richard F. Hasell, West Caldwell; Walter A. Boyce, Glenridge, both of N.J., and Chrisman O. Smith, Paris, Tex., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,300, Dec. 17, 1971, Pat. No. 3,775,634, which is a continuation-in-part of Ser. No. 126,639, March 22, 1971, abandoned. This application July 25, 1973, Ser. No. 382,420
Int. Cl. H01j 9/18
U.S. Cl. 29—25.15 10 Claims



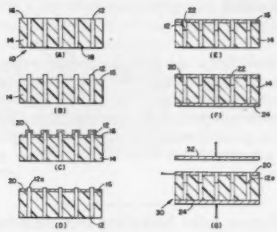
1. The method of manufacturing a base assembly for an electric lamp or similar device, which method comprises;
stamping a cup-like member from sheet metal to form a metal shell,
removing a segment from the bottom wall of said shell of such size and configuration that an inturned flange is formed thereat which partly constricts that end of the shell,
separately forming an insulator which has a substantially flat rim portion and a medial portion that is terminated by a depending boss,
inserting said insulator, boss portion down, into the metal shell through the non-constricted end thereof until the rim portion of the insulator engages the inturned flange at the opposite end of the shell,
holding said shell and insulator in the aforesaid position and concurrently bending selected portions of the side wall of the shell inwardly into overlying relationship with the peripheral edge of the insulator to thereby lock the end of the metal shell to the enclosed rim portion of said insulator and provide a shell-insulator subassembly,
forming the removed segment of sheet metal into a hollow cap that is slightly smaller in size than the insulator boss, and
after said shell-insulator subassembly has been attached to the end of the lamp envelope, force-fitting the cap onto the insulator boss and locking it thereon.

3,840,955
METHOD FOR PRODUCING A FIELD EFFECT CONTROL DEVICE

Jerry W. Hagood, 307 Mountain Gap Rd. S.E., Huntsville, Ala. 35803; Joe Shelton, 700 Tatom St. N.W., Huntsville, Ala. 35805, and Ralph L. Norman, 3644 Marymont Dr. N.W., Huntsville, Ala. 35810

Filed Dec. 12, 1973, Ser. No. 423,954
Int. Cl. H01j 9/02
U.S. Cl. 29—25.18 8 Claims

1. A process for producing an electrical field effect control device comprising the steps of:
providing a field effect emitter material having a plurality of parallel metal fibers per unit area encompassed by an insulating material,
exposing respective first and second ends of said parallel fibers along respective first and second surfaces of said insulating material,
etching said insulating material across said first surface with a first etching agent to reduce the thickness of said insulator and thereby further expose said fibers,
depositing an etch-resistant layer of conductive material over the etched surface of said emitter material,
polishing said conductive material with an abrasive to re-expose said metal fibers without exposing said insulator material,
etching said exposed metal fibers across the surface of said

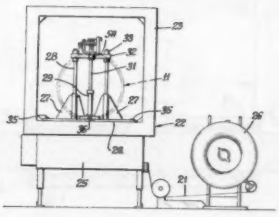


emitter material with a second etching agent for reducing the length of said fibers to a plane or level below the surface level of said insulator,
joining a conductive backing plate to said second ends of said parallel fibers for conducting an electrical potential thereto, and
providing a collector electrode spatially disposed across from said etch-resistant, conductive material in a plane parallel with said first surface of said emitter material, and thereby providing said field effect control device.

3,840,956
WHEEL RIM STRIP ASSEMBLY

Eugene von Heitlinger, Chicago, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Feb. 4, 1974, Ser. No. 439,383
Int. Cl. B23p 23/04; B21k 1/34
U.S. Cl. 29—33.5 7 Claims



1. Apparatus for mounting a nylon strip around the periphery of the rim of a spoked wheel having a valve stem hole therethrough and spokes with their outer ends secured to said rim by nipples extending therethrough, wheel support means including locator means cooperating with said valve stem hole to properly position said wheel thereon when in a loading position, manually operable control means for initiating movement of said support means to an operative position relative to said strapping means, switch means automatically operable to stop movement of said support means in said operative position and to initiate cyclic acutation of said strapping means to wrap a nylon strip peripherally around said rim, tension, cut and secure the ends of said strip together, and piercing means operable in response to completion of said cyclic actuation of said strapping means to cut an aperture in

said strip coinciding with said valve stem hole and to initiate movement of said support means to return said wheel to loading position.

3,840,957

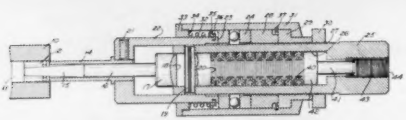
SELF-SIZING BURNISHING TOOL

Eldo K. Koppelmann, Cumberland, R.I., assignor to Amtel, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 233,454, March 10, 1972, abandoned. This application July 2, 1973, Ser. No. 375,721

Int. Cl. B21c *37/30*

U.S. Cl. 29—90 R **9 Claims**



1. A self-sizing roller burnishing tool comprising basic assembly of a mandrel having a frusto-conical end portion and a roller cage having a plurality of frusto-conical rollers held therein substantially in line with the axis of the mandrel member which rollers constitute a group of rollers that are in contact with the frusto-conical end portion of the mandrel member to establish diameter, means for driving and feeding said basic assembly relative to a work piece, means for adjusting the relative position of the rollers and mandrel in preset relationship, yieldable means exerting an axial force in a direction to move the rollers radially in contact with the work piece, said yieldable means being operable to permit the mandrel to move axially and permit the rollers to move away from the work upon excessive burnishing pressure being developed.

3,840,958

CALENDER ROLLS

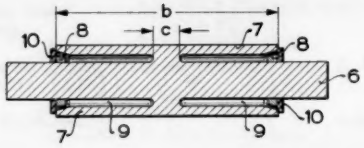
Hermann Mahn, Seelze, Germany, assignor to Herman Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Aug. 7, 1973, Ser. No. 386,358

Claims priority, application Germany, Aug. 11, 1972, 2239550

Int. Cl. B21b *13/02*

U.S. Cl. 29—110 **1 Claim**



1. A calender roll for calendering material to form a film web, said roll being of one-piece construction and formed with annular recesses at each end thereof thereby forming tubular overhanging portions, said recesses being equal to at least one-fifth of the length of the roll, ring means inserted at the outer ends only of said recesses for controlling the deflection of said tubular overhanging portions, the outside dimension of said ring means relative to the inside surface of said recesses being such to provide a clearance therebetween when said roll is in an unloaded condition, a liquid substance having heat-conducting properties filling each of said annular recesses, and seal means disposed outwardly of said ring means for sealing off each annular recess.

3,840,959

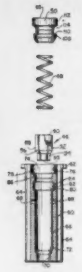
COMPENSATING PLUNGER FOR SOLENOID VALVE AND METHOD OF MAKING

Walter E. Allen, Prospect, Conn., assignor to Peter Paul Electronics, New Britain, Conn.

Division of Ser. No. 151,811, June 10, 1971, Pat. No. 3,733,047. This application Mar. 19, 1973, Ser. No. 342,690

Int. Cl. B21d *53/00*

U.S. Cl. 29—157.1 R **6 Claims**



1. A method for making a compensating plunger for a solenoid valve, said method comprising the steps of providing an axially elongated generally cylindrical plunger body, forming a stepped bore extending axially through said body and having a generally cylindrical main portion, one end portion having a diameter substantially smaller than the diameter of said main portion and a transitional portion between said main portion and said one end portion, forming a tubular shell adapted to be slidably received in said bore and including an enlarged portion adapted to be received in said main bore portion, a reduced portion adapted to be received in said one end portion and an intermediate portion therebetween for engaging said transitional portion, forming an elastomeric insert adapted to be received in said shell and including a generally cylindrical first portion having a diameter substantially equal to the inside diameter of said reduced portion and a generally cylindrical second portion having a diameter substantially greater than the inside diameter of said enlarged portion, forcibly inserting said insert into said shell so that said first portion is received in said reduced portion and said second portion is received in said enlarged portion whereby to form an insert assembly, inserting said insert assembly in said plunger bore so that said reduced portion is received in said one end portion and said enlarged portion is received in said main bore portion, inserting a spring in said main bore portion after inserting said insert assembly into said plunger bore, and forcibly inserting a plug in the opposite end of said plunger bore to retain said insert assembly and said spring therein.

3,840,960

APPARATUS FOR FORMING A STRUCTURAL UNIT

Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

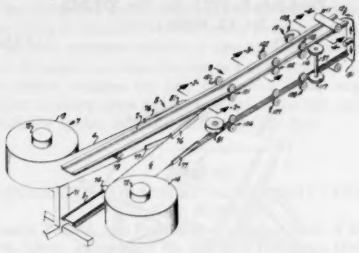
Continuation of Ser. No. 179,193, Sept. 9, 1971, abandoned, which is a division of Ser. No. 888,717, Dec. 29, 1969, abandoned. This application Feb. 1, 1973, Ser. No. 328,709

Int. Cl. B23p *19/00, 17/00*

U.S. Cl. 29—200 B **46 Claims**

1. Apparatus for forming a structural unit defined by opposed pairs of structrual members a first pair of which have preformed slot structures extending longitudinally along opposite margins thereof to receive therein edge portions of the members of a second pair thereof; said apparatus comprising guide means for receiving said pairs of members from supplies thereof and orienting the same in opposed relationship to each other; means for drawing said aligned pairs of members into engagement with each other and inserting edge portions of the

members of said second pair into the slot structures of said first pair; and means for deforming segments of the members of at least one of said pairs into locking engagement with the



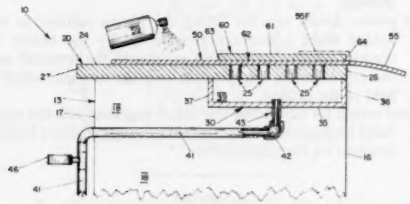
members of the other of said pairs, whereby said pairs of members may be securely interconnected into an integral structural unit.

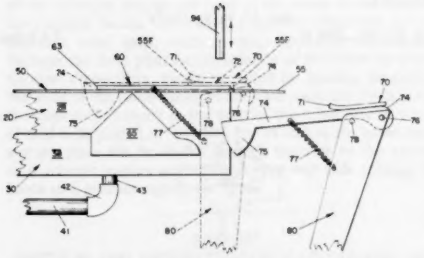
3,840,961

APPARATUS FOR PNEUMATICALLY SECURING BACKING TO SHEET MATERIAL ANCILLARY TO FOLDING OR OTHER OPERATIONAL TREATMENT

Richard L. Brown, 1812 Pelton Ave., Bellevue, Nebr. 68005

Filed Mar. 23, 1973, Ser. No. 344,133
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 J **9 Claims**





1. Apparatus for briefly pneumatically securing a relatively areally smaller non-porous laminar backing in superimposed laterally arrested combination relationship with a relatively areally broader porous sheet material, the pneumatically secured backing-sheet combination for a brief finite time-duration also being pneumatically clamped in laterally arrested relationship to the non-vertical broad upper-side of a shelf-like anvil portion of the apparatus to permit brief operational treatment of said secured and clamped backing-sheet combination, said apparatus comprising:

A. A frame member for said apparatus;

B. A shelf-like anvil attached to the frame member and generally provided of a pneumatically impervious structural material, the shelf broad non-vertical upper-side including a free-end terminus and a finite shelf-area, the shelf within a minor portion of the shelf-area being provided with a plurality of perforations that collectively represent a perforate-area at the shelf upper-side;

C. A pneumatically evacuatable plenum chamber communicating with anvil perforations;

D. A vacuum pump communicating with the plenum chamber and adapted to continuously withdraw air fluid therefrom during said time-duration;

E. Time-control means to limit air withdrawal from the plenum chamber to a finite brief time-duration; and

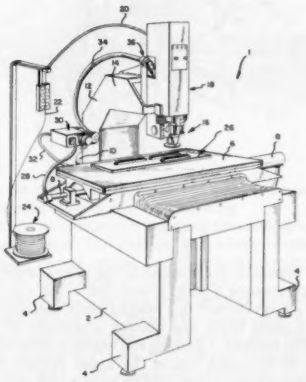
F. Indexing means to permit the areally smaller laminar backing to be located in aligned superimposition upon the areally larger sheet material so the backing is located in overlying registry with at least nine-tenths the anvil perforatearea.

3,840,962

MECHANICAL ANALOGUE COMPUTER IN A WIRING MACHINE

James Ray Coller, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisurg, Pa.

Division of Ser. No. 256,519, May 24, 1972, Pat. No. 3,784,481. This application Nov. 9, 1973, Ser. No. 414,602
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **5 Claims**



1. A machine for bridging a discrete length of electrical wire between selected locations of a substrate, comprising: a table for supporting said substrate, means adjacent said table for connecting first and second ends of said wire, respectively at first and second selected locations on said substrate, first displacing means for displacing said table along a first orthogonal axis, second displacing means for displacing said table along a second orthogonal axis, computer means operatively connected to and responsive to said first and second displacing means for computing a required length of wire necessary to bridge between said one and said second locations, wire supply means for supplying a continuous length of electrical wire to said first mentioned means, wire feeding means opera-

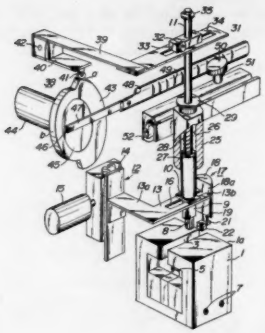
tively connected to said wire supply means and operatively connected to and responsive to said computer means for feeding said required length of wire from said wire supply means to said first mentioned means, and cutting means on said machine for cutting said required length of wire from said continuous length of wire supplied from said wire supply means, said computer means and said wire feeding means and said first mentioned means cooperating for bridging said required length of wire between said first and said second locations on said substrate and for connecting said first and said second wire ends at said first and said second locations of said substrate.

3,840,963

APPARATUS FOR MANUFACTURING FLEXIBLE IMAGE TRANSFER BUNDLES

Nobuyoshi Hashimoto, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,210
Claims priority, application Japan, Oct. 9, 1972, 47-101404
Int. Cl. H05k *13/06*
U.S. Cl. 29—303 P **6 Claims**



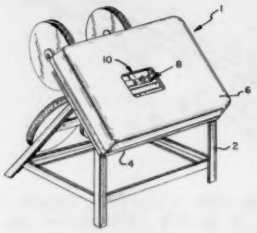
1. An apparatus for manufacturing a flexible image transfer bundle comprising a guide groove formed in a guide block, a holding groove formed in a holding block detachably inserted into said guide block and holding a plurality of foil-shaped strips to be stacked, a pushing rod having a lower rounded end adapted to be urged against the upper surface of said foil-shaped strips held in said holding groove and movable in said holding groove, a raising and lowering means for moving said pushing rod between a holding position where the lower rounded end of said pushing rod is held in said holding groove and separated from the upper surface of said foil-shaped strips held in said holding groove and a raised position where the lower rounded end of said pushing rod is located out of said guide groove, and means for holding in succession said pushing rod at said holding position and then at a press wiping position where the lower rounded end of said pushing rod upon released is urged against the upper surface of said foil-shaped strips held in said holding groove for given periods of time and forwardly moving said pushing rod along said holding groove when it is urged against the upper surface of said foil-shaped strip under a constant pressure and rearwardly moving said pushing rod along said holding groove when it is held at said holding position independent of the thickness of said foil-shaped strips held in the holding groove.

3,840,964

BOBBIN TERMINAL INSERTION MACHINE

Alden Owen Long, Jr., Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 9, 1973, Ser. No. 377,843
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 D **4 Claims**



1. An insertion machine adapted to provide a bobbin subassembly, comprising:

a table surface,

a holder,

a carrier strip advancing mechanism for serially supplying terminals arranged serially along the carrier strip in sequence to the holder,

a platen in the form of a shearing blade adjacent the holder having a surface which initially receives a carrier strip thereon,

a power driven ram for lifting the platen relative to the holder when a terminal is received by the holder to thereby lift the carrier strip relative to the terminal and thereby shear the carrier strip from the terminal which is held in the holder,

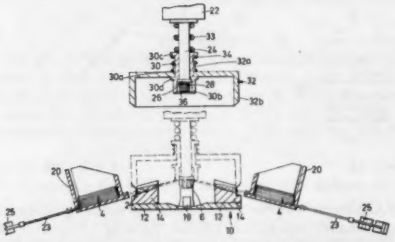
and means for advancing the holder together with the separated terminal held thereon into insertion within a bobbin retained on the table surface.

3,840,965

APPARATUS FOR MANUFACTURE OF SPOKE WHEELS

Ian Goodhall Meiklejohn, Fife, Scotland, assignor to I. G. Meiklejohn Co. Limited, Kirkcaldy, Fife, Scotland

Filed Sept. 15, 1972, Ser. No. 289,353
Claims priority, application Great Britain, Sept. 17, 1971, 43425/71
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D **7 Claims**



1. Apparatus for use in manufacturing a wire-spoked wheel of the type comprising a hub, a rim surrounding the hub, means defining peripherally spaced apertures in the rim, and a series of wire spokes interconnecting the rim and the hub, said apparatus including a jig having peripherally disposed

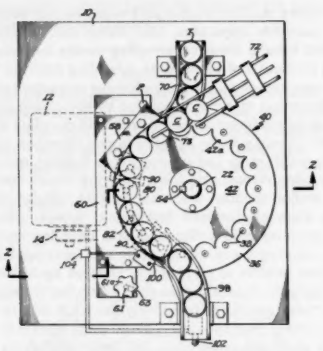
positioning means comprising a peripheral seat to receive the rim, peripherally spaced radial guide passages opening from the seat for alignment with the apertures in the rim, and means for securing the spokes to the hub comprising a press ram, a spoke clamp and a rim clamp supported on the press ram, the ram being so movable, and the spoke clamp and the rim being so slidably mounted relative to one another and to the ram, that, in sequence, when the ram is moved towards the jig, the rim clamp engages the rim, the spoke clamp engages the spokes to clamp same against one end of the hub, and the ram bends the spokes into said one end of the hub.

3,840,966

APPARATUS FOR INSERTING PRESSFIT CUPS INTO CAN BODIES

Francis R. Reid, and Rodney K. Gwiazdon, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed June 13, 1973, Ser. No. 369,685
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **7 Claims**



1. An apparatus for inserting pressfit cups into can bodies comprising in combination a supporting framework, a turret mounted upon the supporting framework for rotation thereon and having recesses positioned parallel to one another thereon and distributed circumferentially on a periphery of the turret to hold can tubes in parallel alignment, a base plate at one end of the turret to engage the ends of the tubes when placed in the recesses on the turret and to thereby effectively seal the adjacent tube ends, vacuum duct means communicating through the base plate to the interior of the tubes to draw a vacuum therewithin, means provided for feeding the cups to the ends of the tubes opposite the base plate and for allowing the cups to fit loosely in the ends of the tubes whereby each of said cups placed in the open end of one of the tubes opposite the plate will be drawn through the tube by the vacuum as the turret rotates whereby the cups will slide through the tubes to a position within the tube.

3,840,967

METHOD AND APPARATUS FOR MAINTAINING AND SERVICING A PRESSURIZED REFRIGERATION SYSTEM OR THE LIKE

John W. Olson, Garland, Tex., assignor to C & D Valve Manufacturing Company, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 343,512, March 21, 1973, abandoned. This application July 13, 1973, Ser. No. 378,920
Int. Cl. B23p *19/04*
U.S. Cl. 29—213 **5 Claims**

1. A tool for use in maintaining and servicing a conventional refrigeration system equipped with a threaded access fitting provided with a removable threaded closure member therein, comprising:

a body member having a first end, a second end and having a longitudinal passageway extending therethrough and communicating at the opposite ends thereof with the first and second ends of said body member;

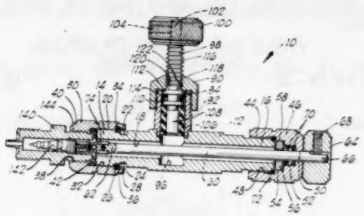
coupling means carried on the first end of said body member for removably connecting the first end of said body member to said access fitting with one end of said longitudinal passageway in sealing communication with the access fitting;

removable cap means securable to the second end of said body member for sealing closure of the opposite end of said longitudinal passageway, and, alternately, for removal from said body member, and including an aperture formed therein substantially coaxial with the longitudinal passageway;

an operating shaft having a first end and a second end and extending through said aperture in said removable cap means, with the first end thereof disposed within said longitudinal passageway and with the second end thereof disposed outside said longitudinal passageway;

means carried by said removable cap means for providing slidingly and rotatingly sealing engagement between said aperture in said cap means and said operating shaft so that said operating shaft may be moved axially and rotatably within said longitudinal passageway;

engaging means secured to the first end of said operating



shaft for releasably engaging and retaining said threaded closure member in said acesss fitting;

control means operatively engaging the second end of said operating shaft for rotating and axially displacing said engaging means within said longitudinal passageway in response to stimulus external thereto;

valve means carried by said body member intermediate the first and second ends thereof for alternately opening and closing said longitudinal passageway, said valve means being adapted to close said longitudinal passageway when said operating shaft is displaced toward the second end of said body member, said valve means including;

a valve fitting formed on said body member and extending laterally therefrom;

a lateral cylindrical bore extending through said valve fitting and a portion of said body member and communicating between said longitudinal passageway and the outer end of said valve fitting;

a valve stem having a first end portion and a second end portion, with the first end portion thereof disposed within said lateral bore and with the second end portion extending beyond the outer end of said valve fitting;

actuating means operatively engaging the second end portion of said valve stem for moving said valve means between a first position opening and a second position closing said longitudinal passageway in response to external force applied thereto;

external threads formed on said valve stem intermediate the first and second end portions;

valve cap means threadedly engaged with said external threads of said valve stem for securing said valve stem to said valve fitting so that rotation of said valve stem relative to said valve cap means and said valve fitting by said actuating means causes corresponding axial movement of said valve stem within said lateral bore;

resilient valve member means fixedly secured to and encircling the first end portion of said valve stem and extending a distance beyond the first end portion of said valve stem, said valve member means being slidably disposed within said lateral bore for moving between a first position within said lateral bore and opening said longitudinal passageway, and a second position within and closing said longitudinal passageway;

a pair of longitudinally spaced circumferential ribs formed on said valve stem with one of said ribs abutting said resilient valve member means, said ribs each having a diameter slightly less than the diameter of said lateral bore and slidingly disposed therein in all positions of said valve stem relative to said valve fitting; and

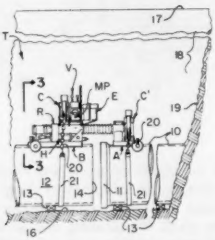
annular resilient seal member means disposed between said circumferential ribs for providing a sliding fluid-tight seal between said valve stem and said lateral bore in all positions of said valve stem relative to said valve fitting.

3,840,968

HYDRAULIC SLIP JOINT PIPE PULLER

Alfred L. Mason, deceased, late of 833 E. Fountain Blvd., Colorado Springs, Colo. 80903 (Pauline E. Mason, executrix)

Filed Mar. 5, 1973, Ser. No. 338,341
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 **18 Claims**



1. A device for forming a pipe joint in a trench by moving a spigot end of one pipe section into the bell end of an adjacent, second pipe section, said pipe sections being in alignment, comprising:

a first base for engaging said one pipe section adjacent the spigot end thereof but spaced sufficiently from said end to permit movement of said end into said bell end of said second pipe;

a second base for engaging said second pipe section adjacent said bell end thereof;

a first clamping device mounted on said first base for attaching said first base to said first pipe section;

a second clamping device mounted on said second base for attaching said second base to said second pipe section;

telescoping, rigidifying means connecting said bases for relative longitudinal movement thereof;

means for moving said connecting means, to move said bases toward each other for moving said first pipe section spigot end into said bell end of said second pipe section and to move said bases away from each other to position said bases for clamping the pipe sections at the next joint; and

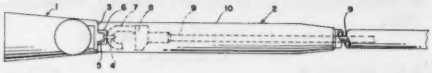
roller means for engaging said pipe and moving said device from a completed joint to the next joint, including rollers resiliently mounted adjacent opposite ends of said respective bases to elevate said bases above a pipe section when said clamping devices are released, and to permit said bases to move into engagement with the respective pipe sections when said clamping device are tensioned.

3,840,969

CLAMP STICK

Alfred R. Landis, Decatur, Ga., assignor to Kearney National Inc., Atlanta, Ga.

Filed Feb. 16, 1973, Ser. No. 332,920
Int. Cl. B23p *19/04*
U.S. Cl. 29—278 **3 Claims**



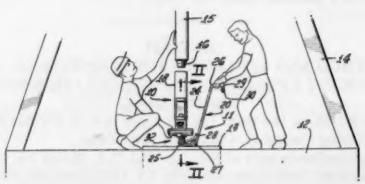
1. A clamp stick for disjointably engaging and bodily manipulating movable apparatus, said clamp stick comprising an elongated tubular element, coupling means mounted on said tubular element and movable to a holding position for maintaining one end of said tubular element in contact with a part of an apparatus to be manipulated by the clamp stick, force applying means interconnected with said coupling means and movable on said tubular element in one direction to an intermediate position to impart apparatus holding movement to said coupling means, said force applying means comprising a slotted collar slidably mounted on said tubular element, a tension element disposed inside said tubular element and interconnecting said collar and said coupling means, latch means including a pawl for securing said force applying means in position relative to said tubular element against movement in the opposite direction, said pawl extending through the slot in said collar to engage selectively the teeth of a rack affixed to said tubular element, an eccentric pivot shaft interconnecting said pawl and said collar, and force amplifying rotatable eccentric means which reacts between said force applying means and said pawl so as to impart relative incremental movement to said force applying means and said tubular element in said one direction to move said force applying means from said intermediate position to a clamping position thereby to establish a secure and stable coupled relationship between the apparatus and the clamp stick.

3,840,970

OIL WELL TOOLING POSITIONING APPARATUS AND METHOD

Harold R. Hawkins, 6675 Holly Way, Anchorage, Alaska 99504

Filed July 23, 1973, Ser. No. 381,532
Int. Cl. B23q *17/00*; **B25b** *13/00, 21/00*
U.S. Cl. 29—406 **8 Claims**



1. Apparatus for centering a heavy lower oil well tool or the like beneath a suspended upper tool or the like and for the

positioning and rotational coupling of the upper and lower tools together, said apparatus comprising:

centering means for receiving and positioning said lower oil well tool thereon, said centering means including lateral positioning means associated therewith for selectively engaging said lower oil well tool and moving said engaged lower oil well tool laterally along said centering means to a position generally vertically aligned with said upper tool;

table means for receiving said centering means thereon, said table means having guide means cooperating with guide means on said centering means to thereby align said centering means on said table means in a fixed, predetermined location;

raising means associated with said table means for raising the table means and thus said centering means and said lower oil well tool carried thereby generally vertically upwardly until the lower oil well tool engages the upper oil well tool in a generally vertically aligned relationship therewith; and

mounting means associated with said table means for rotatably mounting said table means to permit the rotation of the lower oil well tool, the table means and said centering means relative to the upper oil well tool for rotationally coupling the tools together.

3,840,971

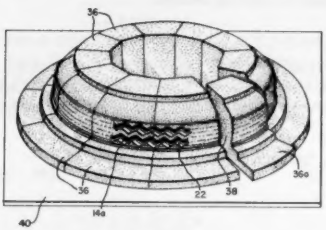
METHOD OF MAKING A SAND MOLD FOR CASTING TREAD RINGS UTILIZED IN TIRE MOLDS

Edward A. McDonald, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 30, 1971, Ser. No. 214,118

Int. Cl. B22c *9/28*

U.S. Cl. 29—407 **7 Claims**



1. A method of making a sand mold for casting a ring-like metal object comprising pouring sand and binder mix in a pattern to form a truncated sector, leaving said truncated sector in said pattern until said sector is hardened sufficiently to permit removal of said sector from said pattern without damaging said sector, removing said sector from said pattern at a predetermined time before said sand and binder mix is completely hardened, then trimming at least one side of said sector and fitting said sector with a plurality of similarly shaped sectors to form a circular mold, and making a plurality of said sectors in timed sequential steps to permit trimming of said sectors before they become completely hardened.

3,840,972

METHOD FOR INSERTING RODS INTO COILED TUBES

Ahmed El Bindari, Brookline, Mass., assignor to Clad Metals Corporation, Boston, Mass.

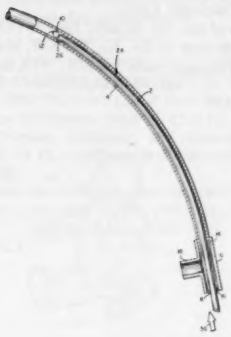
Division of Ser. No. 216,499, Jan. 10, 1972, Pat. No. 3,778,878. This application July 31, 1973, Ser. No. 384,249

Int. Cl. B23p *19/04*

U.S. Cl. 29—433 **9 Claims**

1. The process of inserting a rod into a non-linearly arranged conduit comprising the steps of:

partially introducing said rod into said conduit; causing pressurized fluid to flow in said conduit in the direction



in which said rod is to be inserted; and

pushing said rod externally of said conduit into said conduit, while said fluid flows therethrough.

3,840,973

TRANSPARENCY VIEWING CASSETTE UNIT

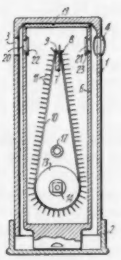
Peter Rex Potter, 47 bis, route de Florissant, Geneva, Switzerland

Filed Nov. 15, 1972, Ser. No. 306,713

Claims priority, application Switzerland, Nov. 24, 1971, 17116/71

Int. Cl. G03b *25/00*

U.S. Cl. 29—434 **2 Claims**



1. A process for manufacturing a transparency cassette comprising the steps of: providing a mini-cassette with a spaced apart outwardly projecting bar and drive wheel, said bar having a top surface bounded by a pair of guide surfaces, providing a pair of light-transmitting openings in opposite sides of said mini-cassette having an aligned optical axis passing above said bar top surface, stretching a flexible band without transparencies about said drive wheel and over said bar top surface and guide surfaces, affixing on the outer face of said band a plurality of image-carrying transparencies having at least one straight edge by attaching said straight edge to said band outer face with the plane of each said transparency disposed perpendicular to said band outer face whereby, when said transparency is adjacent said bar top surface its image is centrally aligned with and perpendicular to said optical axis.

3,840,974
METHOD FOR MANUFACTURING TOY FIGURES

Robert T. Georgen, Fairfield, and Igor E. Dolgen, Monroe, both of Conn., assignors to Character Novelty Company, Inc., South Norwalk, Conn.

Continuation of Ser. No. 54,089, June 5, 1970, abandoned, which is a division of Ser. No. 711,637, March 8, 1968, abandoned. This application June 15, 1973, Ser. No. 370,324
Int. Cl. B23p 19/00
U.S. Cl. 29—434 1 Claim

1. In the manufacture of stuffed toy figures, the improvement in a method of swivelly attaching appendages to a body comprising:

a. inserting a connector assembly into one end of an appendage, said connector assembly including an elongated member having a first section having an enlarged head means attached to one end portion and a second free end section of lesser cross-sectional area than the first section connected to the first section by a frangible portion having a cross-sectional area lesser than the first and second sections and a predetermined tensile strength;

b. confining the enlarged head means within the appendage with the elongated member protruding from one end portion thereof;

c. inserting the protruding portion of the elongated member into a portion of the body;

d. positioning a deformable lock washer about a portion of the elongated member which is positioned within the body, said lock washer having an opening which is dimensioned such that it slides freely over the second section of the elongated member but is dimensioned and configured to engage the surface of the first section of the elongated member in a manner which permits slidable unidirectional force fitting of said washer over said first section; and

e. simultaneously pulling the elongated member in a direction into the body and applying a force to said lock washer in a direction opposite to the direction of pull to cause said lock washer to forcefully seek a locked position while compressing the portions of the appendage and the body in stacked relation between the head means and the lock washer such that when the tensile stress due to the pulling force on said elongated member approaches the predetermined tensile strength of said frangible portion, said frangible portion is severed thereby resulting in swivel attachments having substantially uniform predetermined locking attachments for several sizes of toy figures.

3,840,975
METHOD OF MAKING AN ELASTOMERIC ENERGY ABSORBER

John M. Slessor, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 273,881, July 21, 1972, Pat. No. 3,794,367. This application Aug. 8, 1973, Ser. No. 386,689
Int. Cl. B23p 19/00
U.S. Cl. 29—436 21 Claims

1. A method of making an energy absorbing support device on which to mount an impact bar, comprising:

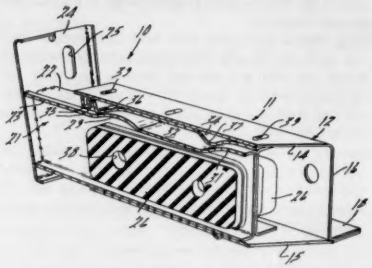
forming an elongated casing member having substantially parallel upper and lower walls and substantially parallel side walls,

forming a substantially I-shaped ram with ramp means on at least one flange thereof,

positioning elastomeric members on each side of the web of the I-shaped ram,

positioning a wedge means on the one flange in proximate relation to the ramp means,

slidably inserting the ram with the elastomeric members and wedge means into the casing members to a predetermined depth and subjecting the same to a curing action to bond the elastomeric members to the I-shaped ram web and side walls of the casing member,



after the bonding is completed, forcing the ram into the casing member beyond the predetermined depth to preload the bonded elastomeric members,

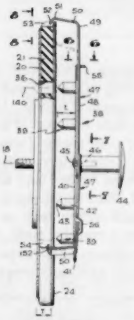
positioning and securing the wedge means to the casing member in abutting relation to the ramp means,

and releasing the force holding the ram in elastomeric member preloaded position so that the elastomeric members will urge the ram outwardly of the casing member whereby the wedge means and ramp means are maintained in abutting relation.

3,840,976
METHOD OF PIERCING HOLES IN SANDING DISCS

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107

Division of Ser. No. 282,348, Aug. 21, 1972. This application July 16, 1973, Ser. No. 379,437
Int. Cl. B23p 9/00
U.S. Cl. 29—445 3 Claims



1. The method that comprises:

attaching an essentially circular sheet of abrasive material to an essentially circular power driven backing structure of a sander which contains suction openings in the backing structure for drawing air and abraded particles from a work surface,

positioning opposite said backing structure and carried abrasive sheet a piercing tool having projections arranged in a pattern corresponding to the pattern of said openings

in the backing structure, and with the piercing tool turned about the center of said essentially circular backing structure and abrasive sheet to a position in which said projections are directly opposite said openings in the backing structure, and

moving said piercing tool and said backing structure relatively axially toward one another to pierce holes in the abrasive sheet by said projections at the locations of said openings in the backing structure.

3,840,977

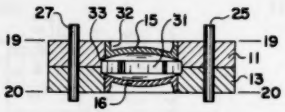
METHOD OF MAKING MOLDS FOR MOLDING OR CASTING OPTICAL PARTS AND THE LIKE

Panayotis C. Dimitracopoulos, P.O. Box 458 Outremont, Montreal 154 Quebec, Canada

Filed May 8, 1973, Ser. No. 358,273

Int. Cl. B23p *3/00, 19/04*

U.S. Cl. 29—460 **12 Claims**



1. A mold-making method according to which:

a. In at least one plate a hole is made, said hole having a shape that closely follows a chosen contour of the pattern of the desired mold-cavity,

b. said pattern is nested along said contour into said hole,

c. the combination of (b) above is plated with a plating, and thereafter said pattern is withdrawn, the combination of said plating and said plate forming an enantiomorphic to said pattern mold-cavity.

3,840,978

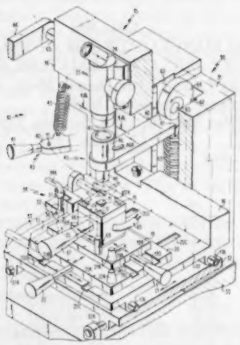
METHOD FOR POSITIONING AND BONDING

John R. Lynch, Fishkill; Leonard E. Otten, Poughkeepsie, and Herbert Wenskus, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation

Division of Ser. No. 875,695, Nov. 12, 1969, Pat. No. 3,628,717. This application Oct. 12, 1971, Ser. No. 188,045

Int. Cl. B23k *5/22, 31/02*

U.S. Cl. 29—493 **4 Claims**



1. A method of aligning and joining a semiconductor chip to a bondable substrate, said method comprising the steps of: fixing one of a chip and substrate in a first system; fixing the other of said chip and substrate in a second system, aligning one of said systems to the other of said systems until one of said chip and said substrate is aligned with the other in superimposed relation; bringing said chip and substrate into intimate contact; heating at least one of said chip and said substrate to a temperature sufficient to thermally bond, one to the other; and oscillating said chip and said substrate against one another in an arcuate path to thereby inhibit the presence of voids intermediate said chip and substrate.

3,840,979

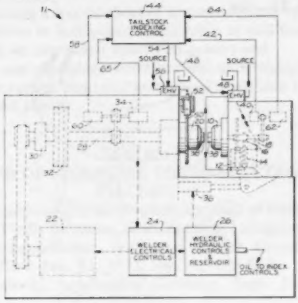
METHOD FOR ANGULAR ALIGNMENT OF INERTIA OR FRICTION WELDED PARTS

Robert G. Miller, Metamora; John W. Crayton, Washington; Charles G. Farmer, Edelstein, and Ronald L. Satzler, Metamora, all of Ill., assignors to Production Technology Inc., Peoria, Ill.

Division of Ser. No. 198,256, Nov. 12, 1971, Pat. No. 3,750,927. This application May 3, 1973, Ser. No. 356,731

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **4 Claims**



1. A method of rotatively aligning friction welded parts comprising,

placing the parts in a friction welding machine in the desired angular alignment prior to engaging the parts in rotating contact at a common interface,

pressing the parts together at the common interface and relatively rotating the parts to heat the interface to a plastic weldable condition,

continuing relative rotation until the entire interface has been heated to the plastic weldable condition and then, as relative rotation between the parts is stopped and while the interface is still plastic, holding one part against rotation and turning the other part by auxiliary drive means to said desired angular alignment with respect to the one part.

3,840,980

HIGH STRENGTH RIVETTED PLATE JOINT

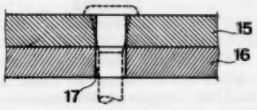
Jean Marc Auriol, Flourens-Haute-Garonne, France, assignor to Ateliers De La Haute-Garonne Etablissements Auriol and Cie, Flourens-Haute-Garonne, France

Filed June 21, 1971, Ser. No. 154,806

Claims priority, application France, June 23, 1970, 70.23158

Int. Cl. F16b *5/04*

U.S. Cl. 29—522 **4 Claims**



1. A method of riveting together a plurality of superposed sheets by means of a metal rivet having a head, a frusto-conical shank portion extending from the head, the larger diameter D of the shank portion being adjacent the head and

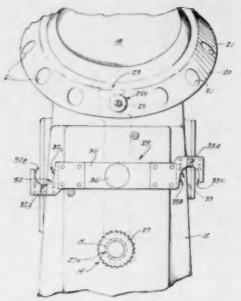
the ratio of diameter D to the smaller diameter d of the shank portion lying in the range 1.05 D/d 1.25, the degree of convergence of the portion being between 1 percent and 15 percent; the method comprising the steps of forming a cylindrical hole in the sheets having a diameter between the diameter d and the average value $(D+d)/2$ of the larger and smaller diameters, inserting the rivet in the hole, and deforming the end of the rivet remote from the head to secure together the sheets.

3,840,981

TOOL CHANGE ARM GRIP

Ervin J. Kielma, Milwaukee, and John T. Currer, Waumatosa, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 9, 1971, Ser. No. 206,346
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **16 Claims**



1. In a machine tool having a circular member and a relatively movable spaced apart carrier presenting an open circular socket adapted to releasably engage said circular member; first resilient clamp means associated with said carrier operative to laterally clamp said circular member to said carrier upon relative lateral movement therebetween in one direction;

second resilient clamp means associated with said carrier operative to axially clamp said already laterally clamped member in said open carrier socket upon axial movement in one direction therebetween; and,

power drive means sequentially operative to sequentially effect relative lateral and axial movement between said circular member and said carrier to sequentially actuate said first and second resilient clamp means for laterally and axially clamping said member to said carrier,

means for reversing said power drive means to effect reverse movements of said power drive in the reverse sequence to effect relative axial movement between said circular member and said carrier first and relative lateral movement second to sequentially actuate locking means and said resilient clamping means for respectively and sequentially effecting axial and lateral unclamping of said carrier relative to said circular member.

3,840,982

CONTACTS FOR SEMICONDUCTOR DEVICES, PARTICULARLY INTEGRATED CIRCUITS, AND METHODS OF MAKING THE SAME

Marvin A. Schuster, Baltimore, and Walter J. Lytle, Catonsville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 605,394, Dec. 28, 1966, abandoned. This application Aug. 14, 1969, Ser. No. 850,136
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **7 Claims**

1. A method of fabricating a semiconductor device comprising the steps of:

A. forming a plurality of conductivity regions adjoining a planar surface of a semiconductor structure with a layer of insulating material extending on said surface;

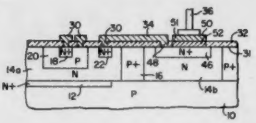
B. opening a first pattern of windows in said insulating layer to expose said semiconductor surface therein at a given conductivity region;

C. depositing a layer of a first metal on said insulating layer and said exposed semiconductor surface at said first pattern of windows;

D. selectively removing portions of said deposited metal layer to form a first metal pattern at least partially coincident with said first pattern of windows;

E. heating the first metal pattern to bond said first metal directly to said conductivity region of said semiconductor structure;

F. opening a second pattern of windows in said insulating layer by use of an apertured photoresist mask layer, said second windows being spaced from said first window



pattern and said first metal pattern to expose said semiconductor surface at said given conductivity region;

G. retaining said photoresist mask layer on said insulating layer and said first metal pattern wherein the openings therein at least partially coincide with said second pattern of windows to leave exposed said semiconductor surface exposed by said second pattern of windows;

H. depositing at least a layer of a second metal uncompatible with said first metal over said photoresist mask layer and said exposed semiconductor surface at said second window pattern;

I. removing said photoresist layer and said second metal thereover to form a second metal pattern at least partially coincident with said second pattern of windows; and

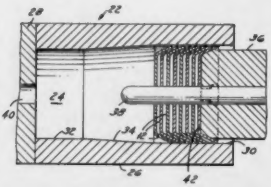
J. heating said second metal pattern to bond said second metal to said conductivity region of said semiconductor structure.

3,840,983

METHOD OF MANUFACTURE OF A DYNAMOELECTRIC MACHINE LAMINATED ARMATURE STRUCTURE

Anthony S. Ryff, Saint Clair Shores, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1973, Ser. No. 355,999
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **4 Claims**



1. The method of assemblying the flux producing core of a dynamoelectric machine armature having an axis of rotation and a generally cylindrical flux gathering surface concentric thereabout comprising the steps of:

forming a plurality of substantially identical nestable lamina members;

arranging a predetermined number of said lamina members in nesting relation within a die, said lamina members having flux gathering portions for defining the flux gathering surface, said flux gathering portions arranged to be substantially in contact with the side walls of the die,

inserting a ram member within the die,

applying compressive pressure to the ram and die members whereby the nesting stack of lamina member is compressively confined within the die forming a composite end assembly, and

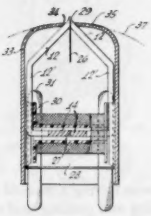
arranging two substantially identical end assemblies in back to back abutting relationship.

3,840,984

METHOD OF MAKING A MAGNETIC RECORDING HEAD

Edwin Alvin Lipps, 205 Chautauqua, Pacific Palisades, Calif. 90272

Filed Oct. 16, 1973, Ser. No. 406,871
Int. Cl. G11b *5/42*
U.S. Cl. 29—603 **16 Claims**



1. The process of making a core for the electromagnet of a magnetic recorder or playback head, that comprises:

forming a strip of core material to have two angularly related central segments converging to an apex, and to have two portions extending generally oppositely to one another from the ends of said segments remote from said apex, with said last mentioned portions merging into ends which extend toward and substantially to a reference plane perpendicular to a center plane disposed between said angularly related segments and bisecting said apex, said reference plane contacting said apex;

lap grinding said core ends and said apex to parallel surfaces of precise flatness, until the remaining core metal of the apex is of only slight thickness at said center plane, so as to provide a thin, bendable, core metal hinge,

bending the core form so made through an angle of 180° on said hinge until the ground ends of said strip abut one another to form a closed back gap, and so that the portions of the precisely ground flat surface on opposite sides of said hinge come into substantial face to face opposition, with the metal of the hinge rising substantially out of the gap to form an exterior ridge owing to said 180° bending of said form, and

grinding away said hinge ridge and a portion of the core metal thereunder to form a final head surface configuration having a recording and/or playback gap therein.

3,840,985

METHOD OF MAKING WATER BED HEATER

Robert C. Miller, Madison, Conn., assignor to Safeway Products Inc., Middletown, Conn.

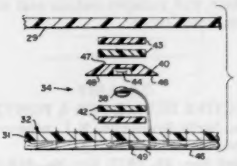
Division of Ser. No. 203,535, Dec. 1, 1971, Pat. No. 3,790,753. This application Sept. 17, 1973, Ser. No. 397,956
Int. Cl. H05b *3/00*
U.S. Cl. 29—611 **8 Claims**

1. A process for manufacturing a water bed heater comprising the steps of:

A. arranging a heating wire assembly on an uncured layer of styrene butadiene type rubber in accordance with a desired configuration;

B. interconnecting a thermostat to said heating wire assembly;

C. mounting a pressure-resistant shield on said thermostat;



D. mounting a second sheet of uncured styrene butadiene type rubber in juxtaposed relationship to said first sheet, forming an assembled water bed heater; and

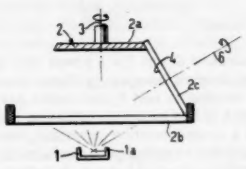
E. curing said assembled water bed heater by applying heat and pressure to bond said juxtaposed layers into a unitary laminated sheath.

3,840,986

METHOD OF PRODUCING MICRO-ELECTRONIC CIRCUITS

Martin Schmidtke; Winfried Ruettenauer, both of Munich, and Reinhold Penzl, Eichenau, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 31, 1972, Ser. No. 285,552
Claims priority, application Germany, Sept. 23, 1971, 2147573
Int. Cl. C23c *13/00*
U.S. Cl. 29—625 **3 Claims**



1. A method of substantially simultaneously metallizing exposed surface areas of a main face of a substrate having opposing main faces and wall surfaces of through-holes in said substrate and between said opposing main faces, said wall surfaces of the through-holes being substantially perpendicular to the surfaces of said opposing main faces and said through-holes having a relatively small diameter compatible with micro-electronic circuits; comprising:

mounting said substrate on an inner face of a sidewall of a truncated trapezoidally-shaped hollow body so that select surface areas of a main face of said substrate are exposed, said body having an enlarged open base area and enclosed top and sidewalls, said sidewalls being attached to said top wall so as to define an obtuse angle between said top and sidewalls, said top wall being rotatable about a first axis which is perpendicular to the top wall face and said sidewalls being rotatable about a second axis which is perpendicular to the respective sidewall faces;

positioning an activatable metal vapor source below said open base area of the trapezoidally shaped hollow body so that an up-facing surface of said metal vapor source is parallel to said top wall of said body;

enclosing the space about said trapezoidally shaped hollow body and said metal vapor source;

activating said metal vapor source so as to produce radiating metal vapors within said enclosed space; and

rotating said top and sidewalls about their respective axes of rotation whereby the through-hole wall surfaces and exposed surface areas of a main face on the substrate are uniformly exposed to said radiating metal vapors and a substantially uniform layer of metal is deposited on said through-hole wall surfaces and on said exposed surface areas of the main face.

3,840,987

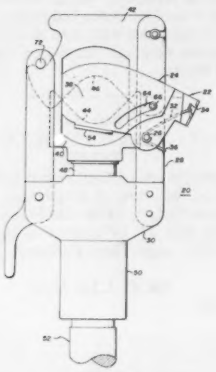
PROTECTIVE DEVICE FOR A POWER TOOL

Louis A. Netta, North Brunswick, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 28, 1973, Ser. No. 419,794

Int. Cl. B21f *11/00*; **B26b** *15/00*, *29/00*

U.S. Cl. 30—90.1 **8 Claims**



1. A protective device for a power tool having a normally exposed work zone, comprising: frame means; shield means pivotably coupled to said frame means and selectively movable between a first position restricting access to said work zone, and a second position permitting access to said work zone; means for coupling said shield means to said frame-means so that said shield means is selectively displaceable between said first position and said second position; means cooperative with said shield means and said frame means for biasing said shield means in said first position; and means for selectively manipulating said shield means from said first position to said second position, said manipulating means being adapted to cooperatively engage a workpiece intended to be inserted in said work zone to provide access to said work zone, said shield means comprising a U-shaped member pivotably coupled to said frame means, said U-shaped member having a lanced portion adjacent the bight of said U-shaped member, said biasing means comprising a torsion spring engaging said lanced portion and said coupling means to bias said shield means towards said first position.

3,840,988

SUSPENSION STRAP CUTTING APPARATUS

Norman H. Hoffman, Eden Prairie, Minn., assignor to Technical Ordnance, Inc., Minneapolis, Minn.

Filed Aug. 22, 1973, Ser. No. 390,385

Int. Cl. B64d *17/38*

U.S. Cl. 30—180 **2 Claims**

1. A suspension member cutting apparatus for a parachute supported cargo having in combination

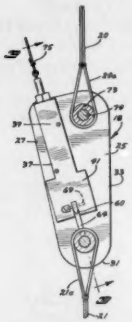
a frame comprising a pair of parallel spaced plate members, a shaft member disposed between said plate members,

a suspension member having a portion thereof secured about said shaft,

a housing carried between said plate members independent of said shaft,

a cutting member disposed in said housing movable to engage and cut said suspension member portion about said shaft member,

said cutting member including a cutting edge portion having transversely extended end portions,



said plate members having a pair of opposed aligned slots therein receiving and guiding said extended end portions of said cutting edge portion,

said housing including means to operate said cutting member,

means actuating said last mentioned means,

a second shaft disposed between said plate members spaced from said first mentioned shaft member,

a suspension member having a portion thereof secured to said second shaft member, and

said suspension members respectively running to a parachute and to a suspended cargo.

3,840,989

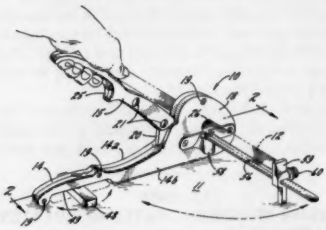
PACKING CUTTER

Andrew M. Hexdall, P.O. Box 147, Morris, Ill. 60450

Filed Nov. 5, 1973, Ser. No. 412,988

Int. Cl. B26b *13/22*

U.S. Cl. 30—231 **11 Claims**



1. A rope cutter comprising, in combination, a pair of handles, one of said handles having a head at an end thereof and the other of said handles being pivotably secured to said head, a pair of cutting blades having opposed cutting edges mounted within said head for opposite reciprocating movement, actuat-

ing means for moving said cutting blades between an open position for receiving a rope to be cut and a closed cutting position, said actuating means including an actuator member rotatably mounted within said head, first linkage means connecting said actuator member to said pivotable handle for imparting rotary movement to said actuating member in response to pivoting movement of said handle, and second linkage means connecting said actuator member to said cutting blades for imparting reciprocating movement to said cutting blades in response to rotation of said actuator member.

3,840,990

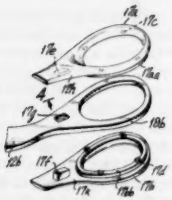
MULTI-THICKNESS PLASTIC HANDLED SCISSORS

Italo Marco Levi Laurenti, 432 Park Ave. South, New York, N.Y. 10016

Continuation-in-part of Ser. No. 379,585, July 16, 1973,. This application Jan. 31, 1974, Ser. No. 438,253

Int. Cl. B26b *13/20*

U.S. Cl. 30—341 **6 Claims**



1. A scissors device comprising in combination: first and second blade elements and pivot means pivotably mounting together the first and second blade elements operatively, each blade element having each of opposite upper and lower surfaces extending in respective flat planes in both longitudinal and transverse directions from a blade tip throughout blade and shank portions to and including a ring handle including a broadened ring shank defining therein an aperture receivable of a handle key projection therethrough, at least one of the handle-mountable shank portions of the first and second blade elements extending angularly laterally relative to its respective blade portion's longitudinal axis, and for each ring handle a handle means defining two separate upper and lower ring portions mounted on opposite upper and lowr faces of the ring handle, one ring portion having a handle key projection extending through the aperture therefor and the remaining other ring portion including a recess aligned with the aperture having the handle key projection's distal end securedly fixedly mounted within the recess, the upper blade element of the first and second blade elements having its respective upper ring portion of a thickness greater than the thickness of the lower ring portion thereof, and the remaining other lower blade element of the first and second blade elements having its respective upper ring portion of a thickness lesser than the thickness of the lower ring portion thereof.

3,840,991

SAW CHAIN LUBRICATION MEANS

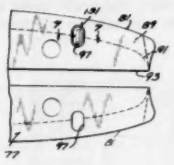
Uwe F. Arff, and Gordon J. Edwards, both of Peterborough, Ontario, Canada, assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 183,998, Sept. 27, 1971, Pat. No. 3,777,401. This application May 17, 1973, Ser. No. 361,187

Int. Cl. B27b *17/12*

U.S. Cl. 30—383 **5 Claims**

1. A chain saw bar for guiding travel of a saw chain, said bar including two peripheral rails having respective inside surfaces defining therebetween a groove adapted for receiving the tangs of the saw chain, one of said rails including an aperture and an insert in said aperture, said insert including means defining a lubrication hole communicating with said groove and including a merging surface which, in the general direction of intended travel of the saw chain, extends to and in inclined relation to said groove, whereby to discourage sawdust accumulation in said lubrication hole.



3,840,992

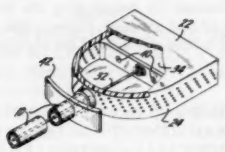
DENTAL HYGIENE DEVICE

Vergil R. English, 12 Foster St., Clifton, N.J. 07011

Filed July 30, 1973, Ser. No. 383,572

Int. Cl. A61c *3/00*

U.S. Cl. 32—40 R **11 Claims**



1. A dental hygienic device, comprising:

a. drive-rod having a fluid transmission channel therein;

b. a handle enclosing one end of said drive-rod, said handle comprising:

i. means for effectuating an axial reciprocation of said rod; and

ii. means for supplying said fluid for and to said fluid transmission channel;

c. an essentially hollow mouthpiece connected to said drive-rod, said mouthpiece molded to conform to the configuration of the oral cavity, and provided with a plurality of discharge ports directed to the teeth and surrounding tissue of the user;

d. piston means depending from the other end of said drive-rod and being integral thereto, said piston means disposed within said hollow mouthpiece and adapted to: allow the egress of said fluid into the mouthpiece and effect the pressurized oscillation of said fluid through said discharge ports;

e. a labial deflector disposed on said drive-rod in front of the anterior teeth when the device is in use.

3,840,993

COORDINATE MEASURING MACHINE

Russell S. Shelton, Paducah, Ky., assignor to Shelton Metrology Laboratory, Inc., Tyler Park, Paducah, Ky.

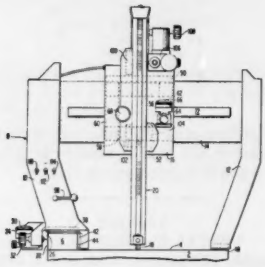
Filed Apr. 25, 1969, Ser. No. 819,252

Int. Cl. G01b *5/00*

U.S. Cl. 33—1 M **2 Claims**

1. Coordinate measuring apparatus comprising a planar surface, a probe supporting member movable parallel to the planar surface, and a probe supported on the probe supporting member by a pair of interfitting telescopic members, one of said telescopic members being attached to the probe and the other of said telescopic members being attached to the carriage, a substantially closed chamber formed between the

telescopic members, said one telescopic member having a downwardly facing area within the chamber which exceeds its upwardly facing area if any within the chamber, means for controlling the pressure within the chamber thereby to control the upward force exerted on the one telescopic member by fluid in the chamber, said probe being directly connected to an element which is parallel to and laterally spaced from the



one telescopic member, means connecting the element and the one telescopic member, hydrostatic bearings for maintaining the axis of said element in a fixed orientation, said hydrostatic bearings being operable upon opposite sides of said element, and means for deactivating the bearing means on only one side of said element, thereby effecting a frictional braking action on the one side of the element.

3,840,994

METHOD AND DEVICE OF AUTOMATIC MEASUREMENT FOR USE WITH A NUMERICALLY-CONTROLLED LATHE

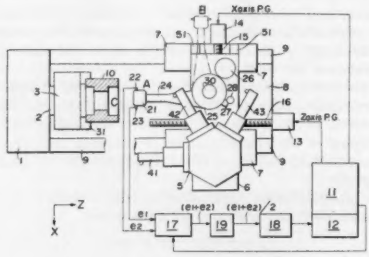
Tadayoshi Izumi; Hideo Hirokawa, both of Kawasaki, and Toshihiro Tsutsui, Sagamihara, all of Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1973, Ser. No. 338,039

Claims priority, application Japan, Mar. 4, 1972, 47-26909[U]

Int. Cl. G01b *7/00, 7/12, 7/31*

U.S. Cl. 33—174 PC **3 Claims**



1. A method of automatically measuring an object, particularly adapted for use with a numerically-controlled lathe provided with a spindle for holding the object, comprising the automatic, programmed steps of actuating a detector head including probes to travel so that the probes are alternatively brought into contact with the object to be measured which has been roughly processed at two diametrically spaced positions on the object, detecting deviations of the actual dimension of the object from the programmed dimension thereof in the form of electric quantities developed by displacements of the probe, and calculating the average value of the deviations for determining a tool position correcting quantity.

3,840,995

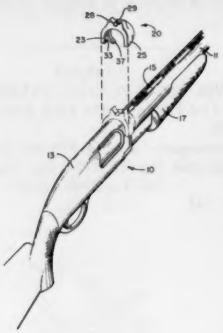
DETACHABLE REAR SIGHT FOR SHOTGUNS HAVING FLAT SIDED RECEIVERS

Albert J. Freiling, 4082 Adams Court, Wheaton, Md. 20902

Filed Feb. 13, 1973, Ser. No. 332,124

Int. Cl. F41g *1/10*

U.S. Cl. 33—233 **4 Claims**



1. A detachable rear sight for a single-barrel shotgun having a flat-sided receiver joined at a junction to the curved single barrel, said sight comprising: a generally U-shaped body member arranged to snap-fit over the top of said shotgun at said junction in inverted U position; said body member including a pair of resilient sides arranged to extend downwardly along the sides of said shotgun and a connecting piece joining said sides and arranged to sit atop the shotgun; said resilient sides each having an interior surface with a portion forward of said junction contoured to resiliently engage said barrel between said sides, and a portion rearward of said junction contiguous with said forward portion and having a flat contour matched to the flat sides of said receiver; the sides of said body member being slightly toed to permit resilient engagement of said receiver between the rearward portions of said sides; and said connecting piece having an outer surface contoured to define a sighting notch.

3,840,996

PROCESS FOR DRYING MINERAL CONTAINING AQUEOUS PROTEIN SOLUTIONS

Donald A. Grindstaff, Minnetonka, Minn.; Joseph S. Steinreich, Olympia Fields, Ill., and Leo B. Post, New City, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 20, 1973, Ser. No. 389,613

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **19 Claims**

1. A process for drying in an atomizing dryer a mineral containing aqueous protein solution comprising:

a. atomizing a mineral containing aqueous protein solution in the drying chamber of an atomizing dryer;

b. contacting the atomized solution in said dryer chamber with a drying atmosphere containing a drying agent selected from the group consisting of tricalcium phosphate, dicalcium phosphate, kaolin, diatomaceous earth, silica gel, calcium silicate hydrate, or mixtures thereof, at a feed rate of said drying agent equivalent to between about 1 percent to about 10 percent by weight of solids contained in said solution;

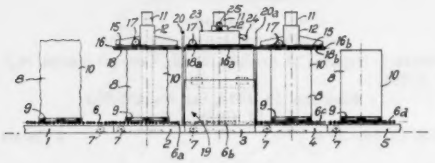
c. allowing sa'd drying atmosphere to dry the solids contained in said atomized solution; and

d. recovering the dried solids, said dried solids containing the solids from said solution in combination with said drying agent.

3,840,997
APPARATUS FOR WRAPPING STACKED COMPRESSIBLE MATERIALS IN A THERMO-SHRINKABLE PLASTICS FILM

Jean Louis Lucas, avenue de la Republique, 33 Prechac, France

Filed Apr. 12, 1973, Ser. No. 350,462
Claims priority, application France, Apr. 18, 1972, 72.13631
Int. Cl. B65b 1/02
U.S. Cl. 34—66 6 Claims



1. A continuously operating shrink film wrapping apparatus comprising, in combination, a horizontal anti-friction conveyor means for supporting for advancement along a linear path, a pallet carrying an article to be wrapped, said article being covered by a shrinkable plastic film, a compression zone at an upstream position along said path, said zone including a planar pressure plate means in parallel spaced relation to said conveyor means and shiftable toward and away therefrom for squeezing said article between said plate means and conveyor means, drive means on said pressure plate means for engaging the film portion above the upper surface of said article and advancing said compressed article along said path, a heating zone adjacent and downstream of said compression zone positioned to receive articles compressed at said compression zone, said heating zone including a second compression plate means in parallel spaced relation to said conveyor and shiftable toward and away from said conveyor, said second plate means including second drive means for engaging the film above the upper surface of said article and advancing said article in said direction, heating means at said heating zone for heating said film as the same traverses said zone, and a cooling zone along said patch adjacent and in downstream relation to said heating zone, said cooling zone including a third compression plate means in parallel spaced relation to said conveyor, said third plate means including third drive means for engaging said film above the upper surface of the article emerging from said heat zone and advancing the same along said path, the spacing of said first, second and third drive means from said conveyor being substantially identical, whereby said article and film are subjected to a constant compressive force as the same traverse said path.

3,840,998
REMOVABLE CLOTHERS BASKET FOR DRYER

Henry Marcussen, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 29, 1973, Ser. No. 392,743
Int. Cl. F26b 11/02
U.S. Cl. 34—128 12 Claims

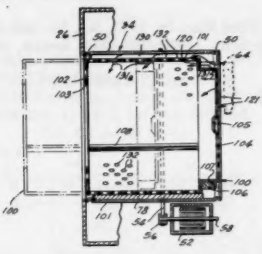
1. In a drying appliance,

basket means comprising a receptacle having a first wall constituting a bottom wall for supporting the receptacle vertically on a support surface when used to carry a load, said first wall constituting an end wall when said receptacle is inserted into a dryer of the horizontal axis rotatable type and disposed horizontally, said first wall having a support formed on the outside surface to provide a bearing journal,

a second wall constituting a side wall for the receptacle to enclose a load to be either carried or dried,

a third wall means forming an opening in said receptacle constituting a top opening when said receptacle is disposed vertically and an end opening when disposed horizontally,

said first and second walls being perforated to admit currents of drying air therethrough,



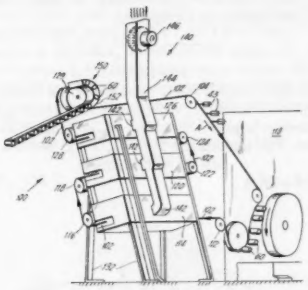
and drive means in said drying appliance receiving said basket means in driving relationship for rotation of said basket means on a horizontal axis,

whereby the receptacle may be pre-loaded and thereafter inserted into the appliance for drying of a load.

3,840,999
APPARATUS FOR RADIATION-CURING OF COATING ON MULTI-SIDED OBJECT

Edward J. Whelan, Hasbrouck Heights, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed May 16, 1973, Ser. No. 360,656
Int. Cl. F27b 9/24
U.S. Cl. 34—105 13 Claims



1. Apparatus for curing a solvent-free coating on the peripheral surfaces of an object, comprising:

a curing oven having an entrance and an exit and a path therebetween; a radiation lamp supported in said oven and positioned to direct curing radiation across said oven and across said path therein;

at least one mandrel for supporting an object; mandrel moving means connected with said mandrel for moving it to guide the object supported by said mandrel through said oven along said path therein;

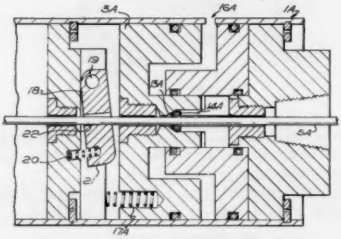
mandrel rotating means connectable with the mandrel and positioned to continuously engage and continuously rotate said mandrel and the object as the object passes through said oven on said path therein; said mandrel rotating means comprising a rack means orientedd generally parallel to said path; and a wheel supported by said mandrel; said rack means being positioned such that said mandrel wheel continuously engages said rack as the

object supported by said mandrel passes through said oven.

3,841,000
REEL CLOSURE

Warner H. Simon, 6511 Comanche Ave., Canoga Park, Calif. 91306

Filed Mar. 26, 1973, Ser. No. 344,480
Claims priority, application Great Britain, Mar. 30, 1972, 14934/72
Int. Cl. F26b *25/00*
U.S. Cl. 34—242 **9 Claims**

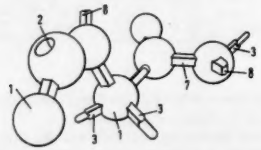


1. An outlet from a spooled wire reel housing comprising a body secured to the housing, the body containing an inlet through which wire is passed from a reel within the housing, a piston having a central orifice through which the wire is passed and an outlet from which the wire is led, there being at the end of the outlet facing the piston a valve seating which cooperates with an enlarged tapered bore at the end of the orifice through the piston to define a chamber containing an O-ring, the piston being spring-loaded towards the seating, and there being a pressure gas inlet into the body to the opposite side of the piston to the springs.

3,841,001
MODELS REPRESENTING MOLECULAR STRUCTURE

Bruce Heywood Nicholson, 18, Rosehill Pk., Reading, England

Continuation-in-part of Ser. No. 31,200, April 23, 1970, abandoned. This application May 11, 1972, Ser. No. 252,183
Int. Cl. G09b *23/26*
U.S. Cl. 35—18 A **9 Claims**

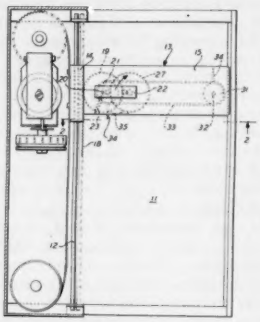


1. A scale model representing a molecular structure comprising atoms and interatomic bonds, comprising a plurality of units each representing a multivalent atom, each of said units comprising a spherical body having a single socket comprising a cylindrical hole of circular cross section extending diametrically of said body with a depth greater than the radius and less than the diameter of said body and a plurality of integral arms representing interatomic bonds radiating from said body, the number of arms being one less than the valence number of the atom represented, said single socket and said arms being oriented relative to one another at substantially the correct valency angles of said atom, each of said arms having at its free end a cylindrical portion of a diameter to fit tightly into a like socket of another unit of said model representing another atom, said cylindrical portion having a length at least as great as the depth of said socket, said cylindrical portion seating against the bottom of said socket to define accurately the depth of penetration of said cylindrical portion in the socket, the total length of said arm being substantially greater than the depth of said socket such that when the end of said cylindrical portion is seated on the bottom of the socket the length of the arm defines the interatomic distance between the atoms, whereby said units are assembled with an integral arm of one unit fitting tightly into the socket of another unit without play to form a substantially rigid structure.

3,841,002
READING-TRAINING DEVICES

Nishan J. Najarian, 8 Arrowhead Rd., Convent Station, N.J. 07961

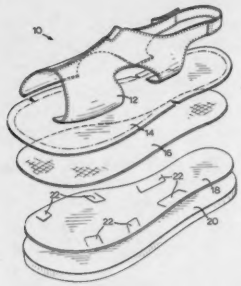
Filed Jan. 23, 1974, Ser. No. 435,702
Int. Cl. G09b *17/04*
U.S. Cl. 35—35 B **4 Claims**



1. A reading-training device comprising:

a. a mounting for a mask,
b. a mask slidably attached to the mounting and defining a reading pacer that moves from the top to the bottom of a text to be read,
c. a site for a text to be positioned under a portion of the mask,
d. means normally driving the mask from the top to the bottom of the site,
e. a rack positioned adjacent to the mask and in general parallelism to the plane defining the course over which the mask is driven,
f. an axle passed through an arcuate slot in the mask,
g. a first gear mounted on the axle in the mask,
h. a spring attached to the mask and to the axle, and normally urging the axle to bring the first gear into engagement with the rack,
i. a handle pivotably mounted on the mask and engaged with the axle whereby the pivotal movement of the handle overcomes the spring and disengages the first gear from the rack and permits the movement of the mask from the bottom to the top of the site,
j. a gear train engaged at one end with the first gear,
k. a first pulley operably connected to the other end of the gear train in the mask,
l. a second pulley rotably mounted in the mask,
m. the first and second pulleys positioned at opposite ends of the mask,
n. a belt mounted on the pulleys,
o. indexes attached to the belt, extending beyond the mask, and moving across each line of text on the site, as the mask moves to cover each line of text successively.

3,841,003
MANUFACTURE OF SHOES
John Huyge, Burlington, Ontario, Canada, assignor to Susan Shoe Industries Limited, Ontario, Canada
Filed Apr. 8, 1974, Ser. No. 458,977
Int. Cl. A43b *3/12*; A43d *9/00*
U.S. Cl. 36—11.5 **10 Claims**



1. A method of manufacturing a shoe having an upper member, a sole member and a composite insole including a base member, a liner pad member and a cover member, each having side edges, comprising the steps of:

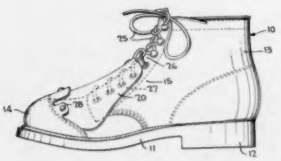
a. forming said base member to provide a plurality of lug members projecting inwardly from said side edges of said base member, said lug members being outwardly foldable from the plane of said base member,

b. securing said liner pad member and said cover in an operative position on said base member,

c. folding said lug members outwardly from the plane of said base member and securing said upper member to said lug members to secure said upper member to said composite insole, and

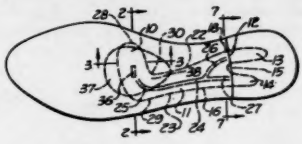
d. securing said sole member to said insole and upper.

3,841,004
INSTEP GUARD FOR SAFETY FOOTWEAR
Byron Everett Gray, 6 Treebrook, St. Louis, Mo. 63124, and Egon F. Clauer, 712-13th St., Wausau, Wis. 54401
Filed Apr. 1, 1974, Ser. No. 457,476
Int. Cl. A43b *13/22*
U.S. Cl. 36—72 R **5 Claims**



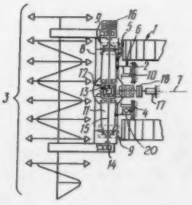
1. In a safety shoe having a sole; an upper having a toe portion united at its edges to the sole and including a shield of rigid material so as to transmit forces applied downwardly on it to the sole, and an instep portion; securing means in the instep portion; and an instep guard of relatively rigid material adapted to fit over the instep portion of the shoe and having its lower forward end overlying the shield in the toe portion towards the rear thereof, the improvement comprising: hinge means taking the form of hinge tines extending outwardly from the rear of said toe portion; fastening means securing said hinge tines to said instep guard such that a line drawn through said fastening means extends in a curved line transversely of the shoe; at least one space between said hinge tines to allow foreign matter lodged between said instep guard and instep portion to escape; and the lower portion of said instep guard being so shaped as to create a folding line in said hinge tines that is curved and generally parallel to the line drawn through the fastening means so that there is a continual biasing of said instep guard against said instep portion.

3,841,005
METATARSAL PAD MOUNTING FOR WEIGHT DISTRIBUTING SHOE SHANK
Ivan E. Cox, 4740 Broadway, Kansas City, Mo. 64112
Filed Oct. 1, 1973, Ser. No. 402,032
Int. Cl. A43b *13/42*
U.S. Cl. 36—76 C **12 Claims**



1. The combination with a spring steel shoe shank mounted between the inner and outer shoe sole of a metatarsal pad mounted on said shank, said shank having a transversely elongated forward portion, an intermediate longitudinal arch supporting portion and a rear portion, said pad overlying said transversely elongated forward portion and extending both forwardly and rearwardly beyond said forward portion, and inter-fitting means on said pad and said forward portion of said shank to hold said pad against shifting relative to said shank.

3,841,006
EXCAVATING AND GRADING MACHINE WITH ADJUSTABLE ROTARY CUTTING HEAD
Ivan Antonovich Mironov, Institutskaya ulitsa, 16, kv. 55; Vladislav Iosifovich Nikitin, Institutskaya ulitsa, 10, kv. 11, both of Pushkino Moskovskoi oblasti, and Valentin Dmitrievich Kiselev, ulitsa Tsentralnaya, 5, Moskovskaya oblast, poselok Mamontovskaya, all of U.S.S.R.
Filed Mar. 1, 1973, Ser. No. 337,196
Int. Cl. E02f *3/18*
U.S. Cl. 37—108 R **1 Claim**



1. An excavating and grading machine with rotary cutting head intended for hillside operation comprising a self-propelled chassis of said machine; a chassis frame; a frame of a rotary cutting head defined by three member frames; a first member frame of said three member frames being rigidly connected to the chassis frame; a second member frame of said three member frames being connected to said first of said three member frames by an axle pivot which is provided with a tubular axle and is arranged coaxially with the longitudinal axis of said chassis frame; a first drive being connected to said second member frame of the rotary cutting head and serving

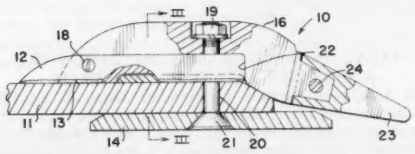
to turn said second member frame about the pivot by means of which this member frame is connected to said first member frame; a third member frame of the rotary cutting head with said cutting head directly mounted thereon which said third member frame connects to said second member frame by another axle pivot whose tubular axle is arranged at right angles to said longitudinal axis of said chassis frame; a second drive being connected to said third member frame of the rotary cutting head and serving to turn said third member frame of the rotary cutting head about said pivot by means of which said third member frame connects to said second of said three member frames of the rotary cutting head; a third drive arranged on the frame of said self-propelled chassis; and a transmission for transmitting the rotary motion from said third drive to said rotary cutting head, said transmission being disposed in the bores of tubular axles of said pivots by means of which said second member frame of the rotary cutting head is connected to said first member frame and said third member frame is connected to said second member frame of the rotary cutting head.

3,841,007

DETACHABLE CUTTING EDGE AND TIP ADAPTER FOR LOADER BUCKETS

Richard C. Howarth, and Eugene M. Wilson, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 24, 1972, Ser. No. 309,108
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 R **4 Claims**



1. An earthworking implement having a forwardly extended support plate,

a cutting edge mounted on a bottom side of said support plate and extending past a forward edge thereof,

a support member fixedly secured to a top side of said support plate,

an adapter mounted on said support member and having a removably secured earthworking tip thereon extending forwardly of a forward edge of said cutting edge, and said adapter being mounted on said support member by a closely mating tongue formed integrally therwith and a mating groove arrangement formed in said support member extending longitudinally therealong, respectively said adapter having substantial surface portions formed thereon to abut a forward end of said support member for transmitting forces from said tip to said support member and support plate directly,

common attaching means constituting a single bolt extending through each of said cutting edge, support plate, support member and adapter detachably mounting said cutting edge and adapter on said support plate and support member, respectively,

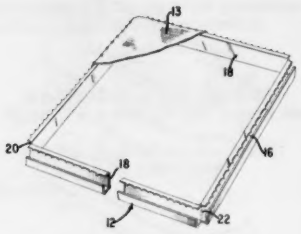
pin means disposed rearwardly on said tongue and groove arrangement and extending transversely through said support member and said adapter for preventing vertical movement of said adapter relative to said support member.

3,841,008

STRETCHER FRAME

William L. Cusick, New York, N.Y., assignor to Mar-Wil Enterprises Ltd., Staten Island, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,728
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.91 **3 Claims**



1. A rectilinear stretcher-frame for holding a sheet of matter, said frame comprising:

four elongated sides, each of said sides being connected to the adjoining sides at the ends thereof, each of said sides comprising

a. a web, said web being an elongated flat structure, with the flat portion being upright, said side ends being the ends of said web; and

b. an upper flat rim attached at right angles to the top edge of said web and extending outwardly from the web, each rim having a multiplicity of teeth extending therefrom whereby a fabric sheet is secured on the frame,

a bottom strip attached at right angles to the lower edge of said web and parallel to said rim,

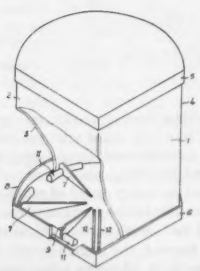
and a guard attached at right angles to the edge of said strip opposite said web, and extending upwardly parallel to said web said guard being located beyond the perimeter of the multiplicity of teeth mounted on each of said sides, said guard forming an enclosure in which the edges of the sheet of material are tucked.

3,841,009

ADVERTISING DISPLAY DEVICE

Werner Mohrlok, Bietwiesenstra. 4, 7218 Trossingen/Wurtt., Germany

Filed Dec. 7, 1972, Ser. No. 311,736
Claims priority, application Germany, Dec. 23, 1971, 2164201
Int. Cl. G09f *12/00*
U.S. Cl. 40—126 A **8 Claims**



1. An advertising display device comprising: a display member adapted to be shaped from a flat configuration to form a sleeve, the display member having edge portions which, when

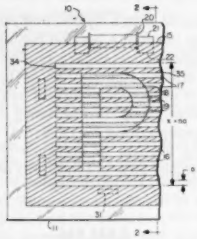
the sleeve is formed, form end portions of the sleeve, the opposite end portions of the display member having a longitudinally inwardly directed rib, and support members, each support member having a flat base, an annular rim perpendicular to the base and adapted to surround a respective one of the end portions of the sleeve, and webs projecting from the base within the rim to define a gap between an edge of each web and the rim, each gap being adapted to receive one of the said edge portions of the display member, two of the webs of each support member being spaced and parallel to define a gap adapted to receive a respective end portion of said rib, whereby the device can be assembled by arranging the sleeve between the bases of the support members so that the rims of the support members surround the end portions of the sleeve, the edge portions of the sleeve being inserted into said gaps.

3,841,010

LIQUID FILLED DISPLAY APPARATUS

Vernon A. Ludwig, Edmonton, Alberta, Canada, assignor to Valmat Signs & Signals Ltd., Alberta, Canada

Filed Nov. 28, 1973, Ser. No. 419,901
Int. Cl. G09f *7/00*
U.S. Cl. 40—137 **15 Claims**



1. In a changeable sign of the type having first and second relatively movable members in which the first member is provided on one surface with a pattern of interlaced transparent and vision obscuring stripes interrupted by a design having vision obscuring and transparent portions, respectively, and in which the second member is provided on one surface with a uniform pattern of two different colors of interlaced vision obscuring stripes, the improvement comprising

housing means for supporting the second member adjacent to the first member with the patterned surfaces in closely spaced relationship and with the other surface of said first member exposed to view, said housing means comprising means for enclosing a volume to form a fluidtight container,

the patterned surface of said second member being contained within said volume;

a fluid in said volume including the region between said first and second members; and

means for causing relative movement between said first member and said second member between a first position in which the design on said first member is rendered visible and a second position in which the design is not visible.

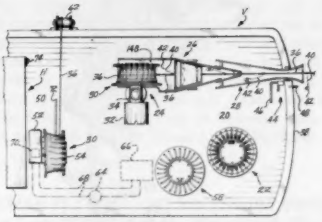
3,841,011

LONG-LINE SETTING, BAITING AND HAULING SYSTEM AND APPARATUS

Kenneth F. Tison, Sitka, Alaska, assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Apr. 30, 1973, Ser. No. 356,060
Int. Cl. A01k *89/00, 97/06*
U.S. Cl. 43—4 **21 Claims**

1. In a fishing line handling system, line dispensing apparatus mountable on a fishing vessel to permit dispensing fishing line from different individual line storage reels interchangeable on said dispensing apparatus, said apparatus comprising reel support means including individual reel support devices thereon adapted for supporting first and second individual line storage reels independently in spaced relationship on said support means, said support devices including elements rotatively journaling the respective reels thereon to permit line-unreeling rotation of such reels about respective generally horizontal axes, line guide means mountable on a fishing vessel in cooperable positional relationship with the first reel



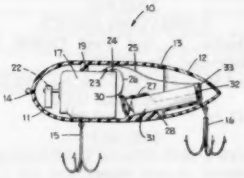
on said reel support means so as to lead fishing line overboard being unreeled from said first reel, said reel support means further including means movably mounting said reel support devices for shifting of said first reel out of said cooperative positional relationship with said line guide means while simultaneously shifting said second reel into such positional relationship, and visa-versa, thereby permitting interchange of an empty reel with a full one on either reel support device while line is being unreeled from a reel on the other reel support device.

3,841,012

ECCENTRIC MOTION FISHING LURE

Christopher T. Maled, 733 Tranquil Trl., R.R. No. 6, Greenwood, Ind. 46142

Filed Mar. 9, 1973, Ser. No. 339,638
Int. Cl. A01k *85/06*
U.S. Cl. 43—26.2 **6 Claims**



1. An artificial fishing lure comprising:

a hollow main body, said main body including a head portion and a tail portion removably and sealingly connected together with said head portion having connecting means mounted thereon connectable to a fishing line;

a battery removably mounted in said body;

a direct current motor mounted in said main body, said motor being electrically connected to said battery and having a rotatable output shaft with an axis of rotation;

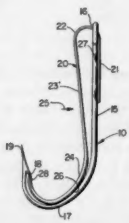
a weight mounted on said shaft and having a center of gravity spaced radially from said axis of rotation imparting eccentric motion to said main body as said shaft rotates; and

locking means in said main body fixedly securing said motor to said head portion to prevent relative motion therebetween.

3,841,013
FISHING ACCESSORY
Walter J. Sabagonis, 1 Aleda Dr., Auburn, Mass. 01501
Filed Feb. 5, 1973, Ser. No. 329,457
Int. Cl. A01k *97/00*
U.S. Cl. 43—43.15 **1 Claim**

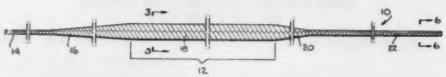
1. A fishing accessory for effective presentation of natural bait on a fishing line, comprising:
   a. an elongated buoyant body, the body being formed of plastic with a hollow interior cavity, the body having a first end and a second end, the body being shaped and colored to resemble a natural object having a main stalk and secondary branches so as to be camouflaged in a marine bottom environment,
   b. a weight fixed to the first end, being of sufficient mass to defeat the buoyancy of the body, the weight being entirely enclosed in the cavity at the said one end thereof,
   c. means for attaching the line to the first end, the means being attached to the weight to maintain it at the said one end, and
   d. a hook fixed to the second end and adapted to carry bait.

3,841,014
FISHSAVING DEVICE
Thomas A. Thomas, Jr., and Frank Thomas, both of 2519 Madison, Hollywood, Fla. 33020
Filed Mar. 27, 1973, Ser. No. 345,336
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.16 **10 Claims**



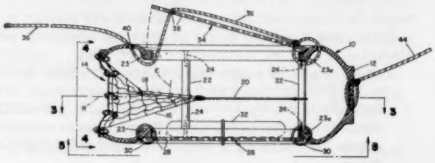
1. The combination of a fishhook, having a shank, an eye at one end of the shank, and a bight leading from the other end of the shank and terminating in a point with a reversely directed barb adjacent thereto, with a barb-nullifying means for closing said barb to render said barb ineffective, said barb-nullifying means comprising a flexible spring member attached to said shank and disposed along said bight to a position spaced from said barb, said flexible spring member comprising a spring portion, a pressure portion spaced from said shank, and a tip spaced from said barb, said tip being movable to a position of closed relationship with said barb when force is applied to said pressure portion to urge said pressure portion toward said shank.

3,841,015
FISHING LINE
Francis J. Gregory, Tolland, Conn., assignor to The Garcia Corporation, Teaneck, N.J.
Filed June 4, 1973, Ser. No. 366,430
Int. Cl. A01k *91/00*
U.S. Cl. 43—44.98 **16 Claims**



1. A fly line usable with a fly rod comprising, in combination, a braided tip portion, a braided belly portion, a braided front taper portion interconnecting said tip portion and said belly portion, a braided running line portion, and a braided back taper portion interconnecting said belly portion and said running line portion, said fly line being fabricated from a member of the group consisting of Nylon, Dacron and glass fibers; and having a cover of polyvinyl chloride forming a coating of substantially constant thickness over the entire line.

3,841,016
LOBSTER TRAP
Manuel F. Silva, Vineyard Haven, Martha's Vineyard, Mass.
Filed May 4, 1973, Ser. No. 357,233
Int. Cl. A01k *69/08*
U.S. Cl. 43—100 **8 Claims**

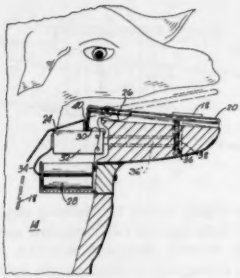


1. A trap for lobsters and the like defined by a partially toroidal body member of reinforced, elastomeric substance having a generally cylindrical end wall and a pair of annular side walls integral with respective extremities of the end wall, each side wall terminating at a respective circular bead of lesser diameter than said end wall, said toroidal body member comprising a vehicle balloon tire with said end wall formed by the tread portion of the tire, spreader means for spreading the side walls apart against the resilient restoring tendency of the elastomeric substance of the body member, thereby holding said circular beads apart permitting ready communication between the volume of said generally toroidal member and the center region, and a pair of center closures, each overlying one of said beads, said pair of center closures defining with said toroidal member an effectively closed volume, a trap opening means from the exterior into said volume enabling entry but not exit of lobsters into said volume, and one of said center closures being openable to enable removal of lobsters caught in said trap.

3,841,017
PORTABLE COIN OPERATED BANK

Steven J. Heble, McCook, Nebr., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 29, 1973, Ser. No. 364,966
Int. Cl. A63h 33/20
U.S. Cl. 46—4 2 Claims



1. A portable coin operated bank having the shape of an animal having a head with an open mouth through which coins are inserted, said bank comprising:

a coin collection chamber;

a chute connecting the mouth to said chamber;

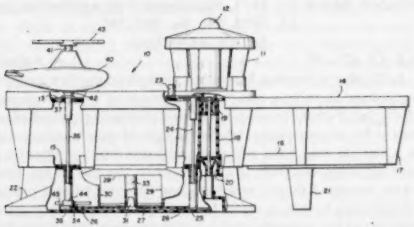
an electrically conductive tongue pivotally secured at the rear thereof in the mouth above the chute, said tongue being pivoted with front end downward when a coin is placed thereon; and

means responsive to the downward pivot of the tongue to pivot the tongue upward to a raised position at which the front end of the tongue is moved adjacent the top of the mouth and the coin slides downward by gravity along the tongue and chute into the chamber, the means including an electrically powered motor and gearing, the motor being energized when the tongue is pivoted downward and being deenergized when the tongue is raised, the means further including an electrical switch, including one movable contact secured to said tongue, closed when the tongue pivots downward and opened when the tongue is raised.

3,841,018
TOY BUILDING WITH FLIGHT DECK AND ROTATABLE BAGGAGE PLATFORM

Victor G. Reiling, Jr., East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 6, 1972, Ser. No. 312,586
Int. Cl. A63h 33/00
U.S. Cl. 46—12 10 Claims



1. A toy airport comprising:

a. a simulated building having a control tower and a flight deck usable by toy aircraft;

b. a hand crank supported on said building for rotation in the flight deck region of said building;

c. a generally vertical drive shaft supported in said building and turned by said hand crank;

d. a drive gear in said building and turned by said shaft;

e. a circular horizontal platform, means rotatably mounting said platform in said building below said flight deck, said building having an open space over said platform and said platform having a gear meshing with said drive gear for rotating said platform as said hand crank turns;

f. a pair of upright walls spaced closely over said platform over parallel chords of said platform spaced on opposite sides of the center of said platform;

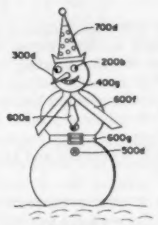
g. another upright wall spaced closely over said platform and forming an oblong island oriented over the center of said platform on a diameter parallel with said chord walls and extending for about one-half of the diameter of said platform so simulated baggage circulates around said platform between said walls as said crank turns; and

h. said building having openings at opposite ends of said island wall allowing play access to said platform.

3,841,019
SNOWMAN FEATURE AND ACCESSORY SYSTEM

Phyllis Kay Lorenzo, 5406 Bush St., White Marsh, Md. 21162

Filed Mar. 7, 1973, Ser. No. 338,741
Int. Cl. A63h 3/36
U.S. Cl. 46—16 6 Claims



1. In a snowman system, an appurtenance comprising: an elongate shank for insertion into a snowman, the shank having portion at one end larger across than the shank, the shank having a bore substantially uniform in diameter throughout the length thereof and opening through the opposite end of the shank, the larger portion having a cavity connecting with the bore, all said shank and larger portion being at least partially light transmissive, and the opposite end of the shank having serrations exteriorly thereon.

3,841,020
FACIAL ANIMATING MEANS FOR A FIGURE TOY

John W. Ryan, Bel Air; Joseph Kossoff, Hawthorne; Jack E. Hartman, Torrance, and Robert Lynn Cowell, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Continuation of Ser. No. 544,420, April 22, 1966, abandoned.
This application Oct. 17, 1968, Ser. No. 784,975
Int. Cl. A63h 3/24, 3/31
U.S. Cl. 46—118 12 Claims

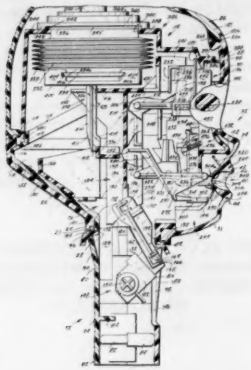
1. In combination with a figure toy having a torso and a head including a flexible plastic face having simulated nose, eyebrow, eye and mouth portions, said mouth portion including an upper lip and a lower lip, said lips being joined together in such a manner that said mouth portion includes a pair of corner portions defining the width of said mouth portion, animating means comprising:

a first mouth animating means operatively connected to said lower lip and including a first animator portion secured

directly to and engaging only an intermediate portion of said lower lip between and spaced from said corner portions;

a second mouth animating means comprising spaced animator portions secured directly to said mouth only at said corner portions for predetermining the position of each of said corner portions; and

actuator means connected to at least one of said mouth animating means for imparting relative movement be-



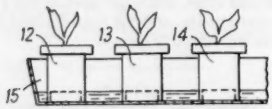
tween said first animator portion and said spaced animator portions, said actuator means including means for moving said one mouth animating means in such a manner that said first animator portion is moved relative to said spaced animator portions between a smiling position wherein said first animator portion is below said spaced animator portions and a sad position wherein said first animator portion is between and above said spaced animator portions.

3,841,021

CULTIVATION POT FOR SEEDLINGS AND PLANTS

Marcel Ferrand, 263 Chemin de Bellet, Nice, France

Filed Feb. 1, 1972, Ser. No. 222,612
Claims priority, application France, Feb. 5, 1971, 71.5093
Int. Cl. A01g *31/02*
U.S. Cl. 47—1.2 **2 Claims**



1. A cultivation system for seedlings and plants comprising: support means;

an elongated horizontally disposed trough on said support means, said trough having bottom and side walls to contain water; and

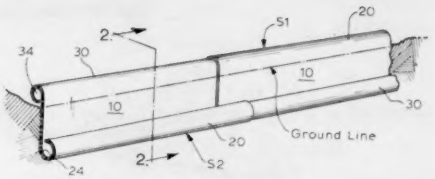
a plurality of pots arranged and standing upright within said trough, each pot comprising an upright tubular body open at its upper and lower ends, each body having a reinforcing rib formation adjacent its upper end, a removable soil supporting invertable cup shape closure member within the lower end of the tubular body, and a capillary space defined between the wall of the tubular body and the sidewall of the closure member extending around the periphery of said closure member side wall, said tubular body and said closure member resting freely on the bottom of said trough.

3,841,022

LAWN EDGING DEVICE

George Thodos, Evanston, Ill., assignor to James E. Thomas, Oakbrook, Ill.

Filed Apr. 25, 1973, Ser. No. 354,373
Int. Cl. A01g *1/08;* **E04b** *1/54;* **F16b** *7/10*
U.S. Cl. 47—33 **7 Claims**



1. A lawn edging device for defining edges of lawns, gardens, flower beds, and the like consisting solely of a plurality of identically formed, elongated members, each of uniform cross-section throughout its entire length, having adjacent end portions interlockingly joined to each other, without additional connecting means, to provide a continuous barrier, a portion of which may be disposed below the surface of the ground with the remaining portion extending above the ground, each of said members being formed from a flexible, extractable material and comprising:

a. a generally vertical body wall section having at the upper and lower ends thereof, integral, first and second, hollow flange sections extending outwardly therefrom on opposite sides thereof;

b. each of said flange sections:

i. being generally cylindrical;

ii. presenting an internal channel;

iii. being relatively flexible;

c. the first flange section of each member being slightly larger than the second flange section to provide a self-contained, self-joined, interlocking connection in end-to-end relation with an adjacent similar member, the position of which has been inverted, so that a marginal portion of the second flange section of each member is snugly, telescopically received within a marginal portion of the first flange section of the other member and the body wall sections of the members are snugly positioned in abutting, face-to-face relation to provide a continuous wall like barrier.

3,841,023

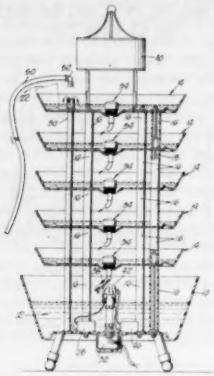
DISPLAY APPARATUS FOR POTTED PLANTS

Richard A. Carlyon, Jr., 751 No. Edmonds Dr., Carson City, Nev. 89701

Continuation-in-part of Ser. No. 253,397, May 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,636, March 22, 1971, abandoned. This application June 12, 1973, Ser. No. 369,301
Int. Cl. A01g *9/16*
U.S. Cl. 47—38 **8 Claims**

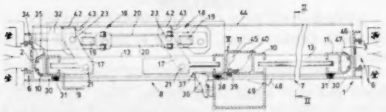
1. Display apparatus for potted plants and the like, comprising: a base forming a reservoir for irrigating water; a plurality of display dishes for supporting and displaying potted plants; means for supporting said dishes in spaced coaxial relationship as a tier on said base and over said reservoir; a pipeline extending upwardly from the reservoir to the top of the tier; a pump mounted in said reservoir and coupled to said pipeline for pumping irrigating water from the reservoir up through the pipeline to the uppermost dish of the tier to permit water from the reservoir to fill the uppermost dish to a predetermined depth; and drainage means including a plurality of stand-pipe drain members mounted in respective ones of said display dishes for causing the irrigating water to pass down from each

display dish to the next lower display dish at a relatively high rate after a particular depth of the irrigating water in each display dish has been achieved, and including further means



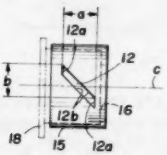
for completely draining the irrigating water from each display dish at a relatively low rate, ultimately to cause the irrigating water to be returned to the reservoir.

3,841,024
SLIDING WINDOW
Albert Shu Lok Cheng, Kowloon, Hong Kong, assignor to Chiap-Hua Comalco Limited, Kowloon, Hong Kong
Filed Mar. 13, 1973, Ser. No. 340,690
Claims priority, application Great Britain, Mar. 24, 1972, 14036/72
Int. Cl. E05d *15/20*
U.S. Cl. 49—130 **11 Claims**



1. A sliding window comprising in combination a frame including compression sealing means, a slidable panel movable in said frame between a closed position and an open position, a further panel and mounting means, including pivot arms, for mounting said slidable panel in said frame, said mounting means being so arranged and disposed that said slidable panel in said closed position lies substantially in the same plane as said further panel and in abutment with said compression sealing means of said frame and, when moved from said closed position to said open position, moves out of said plane to lie in a further plane parallel to said plane but spaced therefrom such that said sliding panel can be overlapped with said further panel, wherein said frame includes a lower member with a track thereon, said further panel includes a mullion with compression sealing means thereon, and said mounting means are so constructed that said slidable panel in open positions is movable in said further plane along said track but as said slidable panel approaches said closed position it is swung, on said pivot arms, into the plane of said further panel to bring it into abutment with said compression sealing means on said frame and said compression sealing means on said mullion of said further panel, wherein said mounting means include housings and rollers mounted in said housings and to run on said track, one end of each said pivot arms being pivotably secured to a respective one of said housings and the other end of each of said pivot arms being pivotably secured to said slidable panel, and wherein said housings and said rollers of said mounting means are provided at the lower end of said slidable panel and said mounting means further includes guides co-operating with a further track on an upper member of said frame, which said further track is mounted above and parallel to said track, said guides having one end of respective further pivot arms pivotably secured thereto and the other end of each of said further pivot arms being pivotably secured to the upper end of said slidable panel.

3,841,025
DEFLECTOR FOR ABRASIVE-ACCELERATOR IN BLASTING MACHINE
Riichi Maeda, 14-9, Higashi Tateishi 3-chome, Tokyo, Japan
Filed June 27, 1972, Ser. No. 266,731
Claims priority, application Japan, June 28, 1971, 46-46290
Int. Cl. B24c *7/00, 5/06*
U.S. Cl. 51—9 **1 Claim**

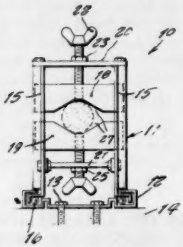


1. A deflector for an abrasive-accelerator in a blasting machine which includes a rotatable impeller, means for conveying abrasive material to said impeller and a plurality of vanes for directing said abrasive material onto a workpiece, the improvement comprising a hollow tubular deflector body having one end open for receiving said impeller, said impeller being rotatably positioned within said deflector body, said deflector body having at least one slot formed through the circumferential wall thereof for permitting abrasive particles to be hurdled out to said vanes of said accelerator through said slot, wherein said slot is of a parallelogram shape and forms an opening in said wall of said body with an inclination relative to the longitudinal central axis of the deflector and wherein two edges of the slot are arranged perpendicular to the longitudinal central axis of the deflector.

3,841,026
DRILL BIT GRINDER AND REFACER
Byron W. Howard, Perma, Mont. 59857
Continuation of Ser. No. 176,376, Nov. 1, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 398,837
Int. Cl. B24b *3/26*
U.S. Cl. 51—71 **2 Claims**

1. A drill bit grinding fixture comprising, in combination:
a baseplate having spaced horizontal tracks;
a frame slidable in the tracks of said baseplate, including side members configured to be received in said tracks and upper and lower cross members interconnecting said side members;
aligned vertically directed grooves in said side members;
first and second jaw plates vertically slidable at their ends in said grooves to have horizontally extending abutting edges;
aligned V-shaped notches in said abutting edges;

and means carried on each of said cross members for forcing said plates toward a position of edge-to-edge contact



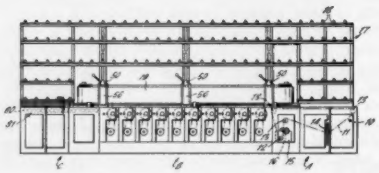
so as to grip a drill bit between said notches, so that when said frame slides in said tracks, said bit moves along its own axis.

3,841,027

GLASS PLATE EDGE GRINDING MACHINE

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima City, Japan

Filed Jan. 4, 1974, Ser. No. 430,689
Int. Cl. B24b 9/00
U.S. Cl. 51—110 **5 Claims**



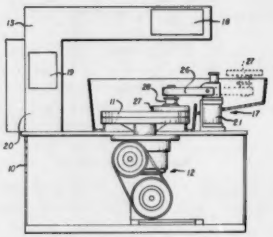
1. In a glass plate edge grinding machine for grinding the lower edge of a glass plate by means of a plural number of grinding wheels arranged in a series, with said glass plate being held between and transported by a pair of belt-conveyers each comprising an endless belt in such a manner that the glass plate is slightly inclined with respect to a vertical plane and supported at said inclined surface by a plural number of backing-up rollers, an improvement in which the belt of one belt-conveyer is supported by a plural number of pressing rollers arranged in a series inside said belt while the belt of the other conveyer is disposed on the opposite side with the interposition of the glass plate to the position of the arranged grinding wheels and supported all over the length thereof by a rigid backing-up plate disposed inside said belt, said backing-up plate being smoothly curved from the upper end to the lower end thereof in the direction away from the glass plate so as to face the belt of said other conveyer, the glass plate is pressed in accordance with the curved surface of the backing-up plate when held through the belt by said pressing rollers, and the spindle of each grinder holding a grinding wheel is supported by a spindle supporting assembly which enables said spindle to move substantially in the radial and axial directions.

3,841,028

APPARATUS FOR HANDLING WORKPIECES TO BE POLISHED

Ernest F. Katzke, Des Plaines, Ill., assignor to Crane Packing Company, Morton Grove, Ill.

Filed Aug. 24, 1972, Ser. No. 283,582
Int. Cl. B24b 7/22
U.S. Cl. 51—125 **6 Claims**



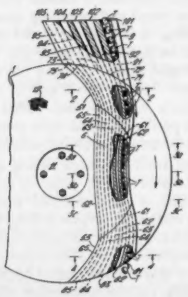
1. Apparatus for applying workpieces to and removing them from a substantially horizontally operating abrading tool, said apparatus comprising a platen, means for mounting the workpieces on said platen for a movement therewith, an arm having a horizontally disposed pivot located to one side of the tool, means for oscillating said arm about its pivot through substantially 180°, means for mounting the platen on the arm to cause said platen at one extreme position of the arm to assume an inverted position to permit loading of the workpieces thereon and at the other extreme position to be located over said abrading tool with the workpieces adjacent said tool, said platen mounting means comprising means for advancing said platen toward said tool independently of said arm oscillating means and independently of said workpiece mounting means, and fluid pressure means for holding said workpieces against said tool with a predetermined pressure while said tool is abrading said workpieces.

3,841,029

APPARATUS FOR CHAMFERING TABLETS

Haruji Saeki, Osaka, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed June 30, 1972, Ser. No. 268,106
Claims priority, application Japan, Mar. 29, 1972, 47-31353The portion of the term of this patent subsequent to June 13, 1990, has been disclaimed.
Int. Cl. B24b 7/00; B23d 67/00
U.S. Cl. 51—128 **15 Claims**



1. An apparatus for chamfering the sharp edges of tableted articles, comprising; a stationary frame, a rotating disk rotat-

ably mounted on said stationary frame and having a grinding or abrading surface which is sufficiently hard and rough to scrape the tablets; a means for driving said disk; a guiding member disposed above said surface, being composed of a working segment on each side of an intermediate segment and having a plurality of grooved channels extending over the full length of the guiding member with inlets and outlets for the tablets at opposite ends of the channels, said channels being opened towards said grinding or abrading surface, with portions of each of said grooved channels which correspond to both of said working segments having a cross-section permitting unobstructed passage of the tablets while holding the tablets oriented in a predominantly upright yet slightly inclined position with one of the sharp edges being directed towards the surface of the disk, and a portion of each of said channels which corresponds to said intermediate segment being twisted in the direction of its length to change the orientation of the tablets from a position where one edge is disposed against the grinding or abrading surface to a position where the other edge is disposed against the surface, said intermediate segment having a somewhat narrowed but deepened and continuously changing cross-section to smoothly permit said change of orientation; and a bracket mounted on said stationary frame for holding said guiding member.

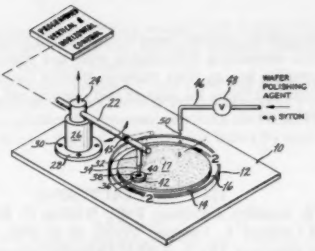
3,841,030
SHARPENER DEVICE
Andrew Laszlo, 3 Locust Ln., Glen Head, N.Y. 11545
Filed Aug. 24, 1973, Ser. No. 391,069
Int. Cl. B24b *23/00, 7/00, 9/00*
U.S. Cl. 51—170 PT **10 Claims**

1. A portable sharpener device comprising a sharpener head having a central bore extending longitudinally therethrough, a cylindrical abrading stone internally mounted within said bore for continuous rotation in a plane transverse to the axis of the bore to grind an edge on a blade, independent internally powered drive means for rotating the abrading stone with the rotational axis of the abrading stone being concentric with the longitudinal axis of the bore and no portion of the abrading stone being exposed beyond the bore, a longitudinal blade registration slot defined in the sharpener head, said registration slot being in a plane coincident with a plane passing through the rotational axis of the abrading stone, said drive means being offset from the rotational axis of the abrading stone and slot so as to provide clearance for the blade, whereby an ice skate blade is insertable into the registration slot for frictional contact with the abrading stone.

3,841,031
PROCESS FOR POLISHING THIN ELEMENTS
Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 82,673, Oct. 21, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 301,940
Int. Cl. B24b *1/00*
U.S. Cl. 51—283 **6 Claims**

1. A process for free polishing of wafers, said process comprising:

a. positioning a wafer to be polished under pressure between a frictional retention surface and an area of a polishing surface, said frictional retention surface initially having a higher coefficient of static friction with respect to said wafer than the coefficient of static friction said area of the polishing surface with respect to said wafer;
b. initiating relative circular motion between said frictional retention surface and said area of the polishing surface with said wafer being retained and remaining stationary with respect to said frictional retention surface solely by virtue of static frictional force between said wafer and said frictional retention surface in sliding frictional engagement with said area of the polishing surface, as a result of said higher coefficient of friction of said frictional retention surface with respect to said wafer;
c. continuing said relative circular motion until said wafer is polished as a result of said sliding frictional engagement



with the polishing surface, said wafer when polished having an increased coefficient of friction with respect to the polishing surface;
d. terminating said relative circular motion; and
e. removing said wafer from beneath said frictional retention surface, as said relative circular motion is terminated, by increasing the friction of said polishing surface with respect to said wafer causing said wafer to cease said sliding engagement with the polishing surface and to overcome said static frictional force retaining the wafer so as to initiate sliding engagement with said frictional retention surface as a result of said increased coefficient of friction of the polished wafer with respect to the polishing surface, whereby said wafer is disengaged and freed from said frictional retention surface without requiring said frictional retention surface to be lifted from said polishing surface.

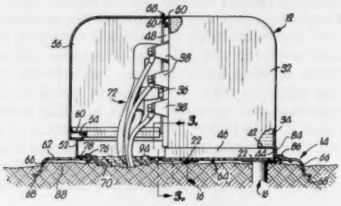
3,841,032
ARTICLE AND SCREW ANCHOR-SUPPORTED, LOAD-BEARING PAD THEREFOR
Charles O. Grannis, III, Centralia, Mo., assignor to A.B. Chance Company, Centralia, Mo.
Filed May 17, 1972, Ser. No. 253,954
Int. Cl. E04d *5/74;* **E04f** *19/00*
U.S. Cl. 52—27 **5 Claims**

1. In combination:
a relatively heavy article requiring stable ground-level support free from tilting or heaving such as caused by seasonal changes in environmental conditions;
a base pad for said article constructed of corrosion-resistant material having a high strength-to-weight ratio,
said pad being provided with a relatively thin, normally horizontally disposed article-supporting panel section; and
a plurality of elongated, rigid anchors adapted to be embedded in the ground in horizontally spaced, upright disposition,
each of said anchors having a normally uppermost end adapted, upon installation of the anchors, to project above the surface of the ground a sufficient extent to

engage and support said pad, thereby supporting said article,

said article comprising an electrical transformer for underground electrical distribution lines,

said panel section being provided with at least one opening



therein for passage therethrough of said distribution lines into connecting relationship with said transformer, said opening having filler material therein surrounding said lines and filling the area of said opening not occupied by the lines.

3,841,033

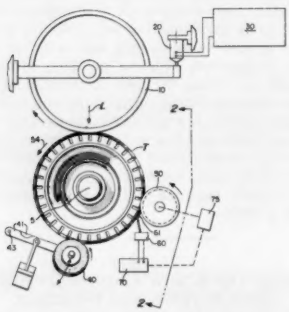
TIRE MANUFACTURING

Paul E. Appleby, Cuyahoga Falls; William D. Braden, Stow, and Leonard A. Vandale, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 266,776, June 27, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,939

Int. Cl. B24b *1/00, 49/04*

U.S. Cl. 51—289 R **7 Claims**



1. Method of reducing non-uniformity of radial force and radial dimension in a tire which method comprises, inflating and rotating said tire about a fixed axis, and while said tire continues to rotate about said axis applying to said tire a radial load sufficient to deflect the tire, concurrently sensing the radial runout of the tire tread surface, force variation sensing by force measuring means the variations in force exerted by the tire on said load and while continuing said force variation sensing, removing material from the tire tread surface at at least one of the two marginal portions thereof in response to said variations in force and in amount and angular location such as to reduce the variations in force, and while continuing said runout sensing, removing material from said surface between said marginal portions in response to said radial runout in amount and angular location such as to reduce the radial runout of the tire.

3,841,034

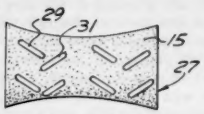
TREAD GRINDING WHEEL

Gerhard R. Held, 22644 Shiell Dr., Mt. Clemens, Mich. 48043

Filed Nov. 10, 1972, Ser. No. 305,479

Int. Cl. B24d *5/10;* **B24b** *5/04, 5/44*

U.S. Cl. 51—356 **2 Claims**



1. A self-cooling tread grinding wheel comprising an axially elongated annular body having an abrasive exterior surface;

said body being unitary and having a concave exterior surface configuration in the direction of its longitudinal axis; a radially transverse internal web and a hub parallel to the longitudinal axis of said body, for mounting upon a drive shaft;

said body having a series of longitudinal spaced circumferential rows of elongated non-circular air cooling slots;

said elongated slots extending radially inward from the exterior surface of the body to a depth not more than one half the body thickness;

said elongated slots being spaced axially inward of the longitudinal ends of said body;

the slots in each row being parallel;

said slots being of maximum depth intermediate their ends, with end portions of the slots running out to the outer surface of the body;

said slots extending at an acute angle to the body axis.

3,841,035

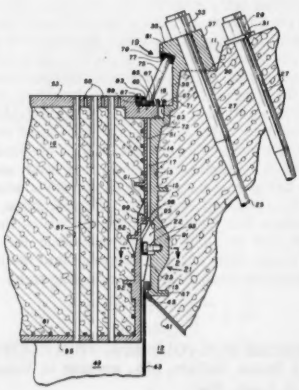
CONCRETE PRESSURE VESSEL

Hans H. Amtmann, Rancho Santa Fe, and Thomas Macken, San Diego, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed July 19, 1971, Ser. No. 163,969

Int. Cl. E04h *7/18*

U.S. Cl. 52—21 **16 Claims**



1. A concrete pressure vessel for a nuclear reactor, comprising, a main vessel portion defining a pressure chamber, said main vessel portion having at least one penetration therein

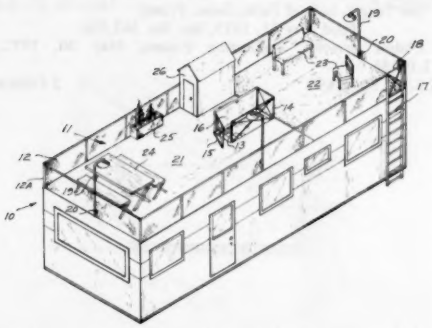
communicating with said chamber from outside said main vessel portion, a metal penetration liner for said penetration, said penetration liner having at least one anchor extending therefrom for transferring axial forces to said main vessel portion, a concrete closure plug for closing said penetration, said closure plug being of a size to fit within said penetration with a clearance space between said penetration liner and said plug, means for sealing the space between said plug and said penetration liner near the outer terminus of said penetration to allow said plug to be compressively loaded about its periphery by the pressure within said pressure chamber, primary retaining means for securing said plug against axial forces, and secondary retaining means for securing said plug against axial forces in the event of failure of said primary retaining means, said secondary retaining means including a plurality of interengageable members on both said plug and said penetration liner to transfer axial forces on said plug to said penetration liner, at least some of said interengageable members being displaceable to disengage and permit removal and insertion of said plug.

3,841,036

TRAILER DECK

Jesse Ronald Johnson, 277 E. Kiowa, Mountainaire, Ariz. 86001

Filed Mar. 26, 1973, Ser. No. 344,827
Int. Cl. E04b *1/12*; E04f *11/04*
U.S. Cl. 52—28 **5 Claims**



1. An open air deck for increasing the habitable area of a flat roofted trailer and being mounted upon the roof of the trailer, said deck comprising:

a. access means disposed within the roof of the trailer for providing communication between the interior of the trailer and said deck;

b. guard means disposed about said access means for restricting passage through said access means;

c. peripheral fence means extending about the edge of the roof for defining the perimeter of said deck, said fence means also preventing trespass from said deck;

d. decorative means attached to said deck for enhancing the aesthetic value of said deck;

e. a source of electrical power disposed within said deck; and

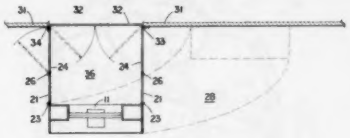
f. electrical light means connectable to said source for illuminating said deck; whereby, the living area for the occupants of the trailer is increased by said deck.

3,841,037

PORTABLE WINDOW-SERVICE COUNTER UNIT

Larry G. Clark, 5532 Hollister Dr., Indianapolis, Ind. 46224

Filed July 5, 1973, Ser. No. 376,800
Int. Cl. E04h *1/06*; E04b *1/343*
U.S. Cl. 52—36 **10 Claims**



1. A portable window-service counter unit comprising:

a front, customer-facing wall having a window therein;

a counter behind said window;

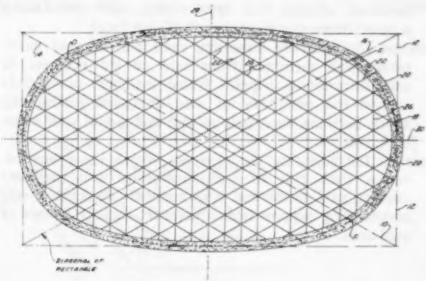
first side wall means coupled to said front wall and movable from a position at least partially enclosing a portion of the unit, to a position for co-operating with the front wall to form at least a portion of a vestibule faced by said window.

3,841,038

ROOF CONSTRUCTION

David H. Geiger, 788 Riverside Dr., New York, N.Y. 10032

Division of Ser. No. 133,198, April 12, 1972, Pat. No. 3,772,836, which is a continuation-in-part of Ser. No. 80,048, Oct. 12, 1970. This application May 11, 1973, Ser. No. 359,553
Int. Cl. E04b *1/32*, *1/36*
U.S. Cl. 52—80 **14 Claims**



1. A non-circular and non-elliptical roof structure defining an enclosed occupiable building space comprising a ring projecting in plan substantially to a closed curve having major and minor axes and a plurality of skewed axes of symmetry, a plurality of sets relatively rigid arches connected to said ring with the arches of at least two sets respectively extending in plan substantially parallel to two of said skewed axes of symmetry, and another set of arches extending in plan substantially parallel to at least one of said major and minor axes, with the opposite ends of the arches in said another set connected to said ring, said arches in each set crossing the arches in the other sets at predetermined locations throughout said structure and being operatively interconnected to each other at all of said crossing locations, whereby said ring is funicularly loaded under substantially all loading conditions.

3,841,039

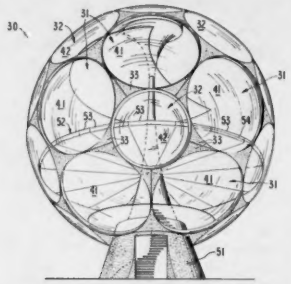
MODULAR VERTEX STRUCTURE

Philo T. Farnsworth, III, P.O. Box 251, Bolinas, Calif. 94924

Filed Jan. 9, 1970, Ser. No. 1,583

Int. Cl. E04b 5/43

U.S. Cl. 52—81 10 Claims



1. A polyhedral structure having a plurality of vertices and a plurality of edges meeting at each of the vertices and defining the faces of the polyhedral structure comprising:

a plurality of support frame members defining the edges which define at least certain faces of the polyhedral structure,

each of said support frame members having

at least one leg member of a pair of leg members extending at least part way along edges defining such faces and

at least one curved portion defining an arc of a substantially circular area centered in the face of the polyhedral structure defined by such edges,

the plurality of support frame members at each face joined together with the curved portions thereof completely surrounding said substantially circular area thereof,

at least a pair of substantially circular membrane wall members closing said area within said surrounding support frame members at each of such faces,

means for coaxially mounting each pair of said membrane wall members from said curved portions of said surrounding support frame members completely around the periphery of said area and sealing the space between each pair of said membrane wall members, and

means for adjusting the pressure within the space between each pair of said membrane wall members causing said membrane wall members to tension said surrounding support frame members radially inward of said area.

3,841,040

BUILDING STRUCTURES

Ronald Garnett Toulson, Mt. Maunganui, and Ronald George Nix, Taurnaga, both of New Zealand, assignors to South Seas International (N. Z.) Limited, Mount Maunganui, New Zealand

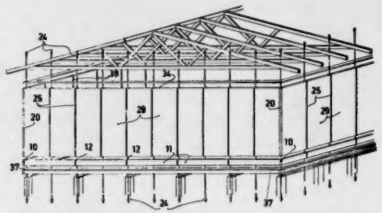
Filed Aug. 21, 1972, Ser. No. 282,225

Claims priority, application New Zealand, Aug. 23, 1971, 164640

Int. Cl. E04b 7/02

U.S. Cl. 52—92 11 Claims

1. An improved building structure comprising exterior bottom plate adapted for mounting around the perimeter of a foundation and having a tongue extending along the length of the plate with holes spaced along such tongue, a plurality of wall posts each having grooved ends and a lower stud of a length to pass through a selected one of the said holes when the lower groove end of the post fits upon the said tongue, a plurality of wall members, including joinery and window panels, each having a height equal to the length of the wall posts and grooved sides including a grooved bottom side fitting upon the tongue of the exterior bottom plate and a grooved vertical side to accommodate a vertical marginal part of an adjacent wall post, a top plate passing along said fitting within the top grooves of the wall posts and the wall members, the top plate having holes positioned to align with the wall posts,



studs passing up from the posts and through the holes in the top plate for passing up through holes in roof trusses, the construction and arrangement being such that when the bottom studs are passed through holes in a foundation and secured and the top studs through holes in the roof trusses and secured, the roof trusses, the wall components and the bottom plate are locked to the foundation as a composite structure.

3,841,041

TANK FOR A SWIMMING POOL OR THE LIKE

Jacques Friedland, 14, rue Beautreillis, and Pierre Habib, 2, rue Turgot, both of Paris, Seine, France

Filed May 21, 1973, Ser. No. 362,236

Claims priority, application France, May 30, 1972, 72.19256

U.S. Cl. 52—169 2 Claims

1. A swimming-pool tank in a pit in the ground with a wall adjacent to the soil of said pit and having a fluid-tight inner lining, wherein the value of the modulus of elasticity of said wall is equal at a maximum value to twice the modulus of elasticity of the soil in the vicinity of said pit, wherein the maximum thickness e of the wall in centimeters is about

$$e = \tfrac{1}{4} \cdot 2{,}500 \cdot s/E$$

where E is the modulus of elasticity and s the ultimate tensile strength of said wall, said wall further comprising rigid anchoring means embedded therein and projecting into the soil of said pit.

3,841,042

PANEL LOCKING DEVICES

Burton L. Siegal, Skokie, Ill., assignor to Tiffany Industries, Inc., Maryland Heights, Mo.

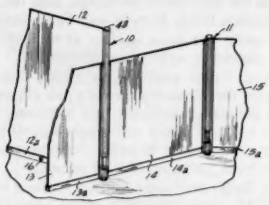
Filed Mar. 13, 1973, Ser. No. 340,908

Int. Cl. A47g 5/00

U.S. Cl. 52—239 6 Claims

1. A modular panel assembly comprising a column having a plurality of internal splines extending vertically along the

periphery thereof, a channel member having a pair of vertically spaced external splines thereon located in proximity to the top and bottom thereof and arranged to be received within said internal splines to accommodate sliding movement but prohibit disengagement between said column and said channel member, said column having a relieved portion therein in



close proximity to the bottom thereof wherein one of said external splines may be radially received for accommodating engagement between said external and internal splines upon relative vertical movement therebetween, and abutment means on said column limiting the extent of sliding movement between said column and said channel member.

3,841,043

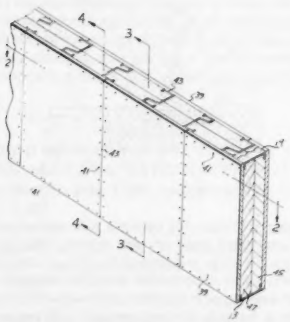
WALL CONSTRUCTION

Daniel L. Zinn, 2545 Beaufait, Detroit, Mich. 48207

Division of Ser. No. 257,943, May 30, 1972, abandoned, which is a division of Ser. No. 74,022, Sept. 21, 1970, abandoned. This application July 25, 1973, Ser. No. 382,604

Int. Cl. E04b *1/74*

U.S. Cl. 52—243 **5 Claims**



1. In a sound attenuating wall between parallel fixed structures of a building, the improvements comprising:

a series of formed elongated spaced building wall studs of the web and double flange type between and anchored at their ends to said building structures, with each stud when formed and anchored in line having a more resilient flange and a less resilient flange;

with the studs being arranged in reversed alternation so that the more resilient flanges of spaced adjacent studs face in opposite directions and equally the less resilient flanges of spaced adjacent studs face in opposite directions;

in combination with wall panels on one side of the line of studs arranged so that edge portions are adjacent each other and adjacent the less resilient flanges of such side and are affixed to such less resilient flanges;

and central portions of such panels are adjacent the more resilient flanges of such one side.

3,841,044

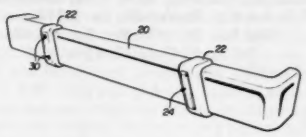
RESILIENT BUFFER ASSEMBLY

Martin M. Brown, Birmingham, and Lawrence Krawczak, Detroit, both of Mich., assignors to Robin Products, Warren, Mich.

Filed Sept. 21, 1972, Ser. No. 290,978

Int. Cl. B60r *19/08;* **E04c** *2/44;* **E04f** *19/02*

U.S. Cl. 52—716 **12 Claims**



1. An elongated resilient trim member having a plurality of integral connectors projecting from the longitudinal axis of said trim member, each of said connectors being tubular, hollow and open at its distal end and having generally parallel side walls and an integral locking protuberance projecting from opposite sides of each of said side walls, said locking protuberances having a lead-in camming face inclined outwardly from said side walls, from said distal end, and a locking face extending toward said connectors from adjacent said camming face, whereby said side walls of the connectors are biased inwardly upon receipt in a mating aperture in generally parallel relation, maintaining the relative parallel relation of the opposed camming and locking faces during installation of the trim member.

3,841,045

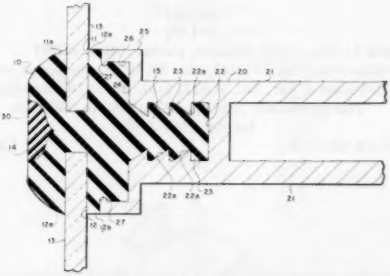
CURTAIN WALL GASKET SYSTEM

Homer C. Criswell, 2608 Black Oak Ln., Arlington, Tex. 76012

Filed Feb. 26, 1973, Ser. No. 335,470

Int. Cl. E06b *3/62*

U.S. Cl. 52—395 **5 Claims**



1. Curtain wall gasket and support system comprising:

a. a support mullion having a tongue-receiving groove extending parallel to one vertical face thereof adapted to receive the tongue portion of an elastomeric gasket and further including flange means extending from the outer edge of said vertical face defining an expanded channel adjacent and parallel to said tongue-receiving groove,

b. gasket means comprising an elongated elastomeric body substantially T-shaped in cross-section, the base of said T forming a tongue portion mating with said tongue-receiving groove, the head portion of said T-shaped body having opposed grooves running along the length thereof and disposed normal to said tongue, the external surface of the portion of said T-shaped body between said oposed

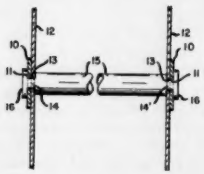
grooves and said tongue conforming to the internal dimensions of said channel, said body further including a wedge-receiving groove along the face thereof opposite said tongue, and

c. wedge means mating with said wedge-receiving groove.

3,841,046
WALL FORM

Patsy A. Scicchitano; Stanley M. Britz; Anthony Malarbi, Jr., and James R. McCarthy, all of Valley Industrial Services, Inc., P.O. Box 616, Bentleyville, Pa. 15314

Filed Feb. 21, 1973, Ser. No. 334,486
Int. Cl. E04h *12/12;* **E04c** *5/04*
U.S. Cl. 52—650 **4 Claims**

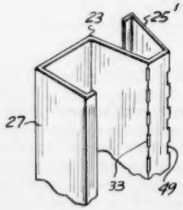


1. A wall form comprising, spaced grids each formed of a plurality of elongated first straps having spaced non-circular openings, a plurality of second elongated straps, said straps having spaced non-circular openings in a direction transverse to those of the first straps, said first plurality of straps being overlaid transversely across said second plurality of straps with their respective non-circular openings in alignment and a plurality of spacer members having non-circular end fastening portions, each of said non-circular end fastening portions passing through the non-circular openings of transversely overlaid elongated straps of each of said spaced grids and having a portion larger than the smallest dimension of the non-circular opening in each of said first and second straps which on rotation engages the overlaid straps of each grid to form a plurality of spaced grids.

3,841,047
STUDS

Daniel L. Zinn, 2545 Beaufait, Detroit, Mich. 48207

Division of Ser. No. 257,943, May 30, 1972, abandoned, which is a division of Ser. No. 74,022, Sept. 21, 1970, abandoned.
This application July 25, 1973, Ser. No. 382,606
Int. Cl. E04c *3/07*
U.S. Cl. 52—720 **7 Claims**



1. An improved stud having a bearing flange, a mounting flange and a web joining the mounting flange to the bearing flange, said stud for use in a wall made up of a line of substantially identical studs and wall panels on opposite sides of the wall, with the studs alternated in reversed arrangement so that on each side of the wall the mounting flanges alternate with the bearing flanges; each pair of adjacent wall panels on each side of the wall having their adjacent panel edges fastened to a mounting flange and with each panel on each side of the wall having its central part bearing against a bearing flange; the improvement comprising:

each bearing flange and each mounting flange and its juncture with the web being so formed that the entire bearing flange will deflect a greater amount, from the web-flange juncture to the free end of the flange, than the deflection of the mounting flange from its web-flange juncture to its free end under the same loading at the same distance from the respective web-flange junctures;

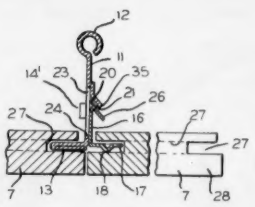
said mounting flange providing a stiffer, less resilient mounting for the adjacent edges of a pair of panels so that when the panels are fastened to a mounting flange the panels are retained firmly and snugly against the mounting flange in a manner to avoid deflection inwardly or outwardly from the plane of such panels;

said bearing flange providing a more resilient bearing for the center of a panel having its edges fastened to a pair of mounting flanges, so that the center of the panel and the bearing flange flex inwardly resiliently for sound attenuation, but with the center of the panel being free of outward bias from the bearing flange, which bearing flange is formed to be free of a tendency to deflect outwardly, though it is resilient enough to be flexed inwardly by outward sound waves impinging against the panel.

3,841,048
CONCEALED GRID SYSTEM

Reinhardt H. Jahn, Riverside, Ill., assignor to Chicago Metallic Corporation, Chicago, Ill.

Division of Ser. No. 139,377, May 3, 1971, Pat. No. 3,714,753.
This application Jan. 29, 1973, Ser. No. 327,700
Int. Cl. E04b *5/55*
U.S. Cl. 52—732 **12 Claims**

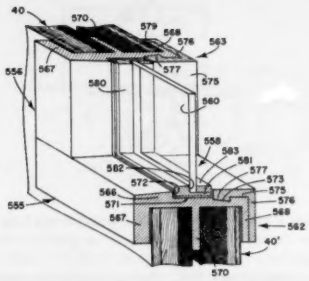


1. A runner structure for use in a grid assembly forming a part of a concealed type of grid system with accessibility above the panels to be supported thereby, comprising a support member, and a supportable member adapted to be supported from said support member, said support member being constructed at its ends for engagement with respective main runners for support thereby, said support and supportable members each having a vertically directed longitudinally extending portion terminating at its lower edge in a longitudinal flange extending horizontally outward from a face of the associated vertically directed portion, said support member having means thereon extending laterally outwardly from the opposite face of said vertically directed portion forming means for interlocking engagement with cooperable means on said supportable member, said means on said support member being constructed for engagement with such cooperable means by upward movement of the latter means relative to said support member, with said vertically directed longitudinally extending portions in side-by-side relation and said flanges extending laterally outwardly in opposite directions therefrom and disposed in a common plane, such cooperable means being disengageable upon application of downwardly directed force upon such adjacent portion of such an engaged supportable member.

3,841,049
GLAZING FRAMING METHOD IN MODULAR WALL CONSTRUCTION

G. Newton Boice, 1502 Library Ave., McKeesport, Pa. 15132

Division of Ser. No. 214,539, Jan. 3, 1972,. This application June 13, 1973, Ser. No. 369,448
Int. Cl. E06b *1/04*
U.S. Cl. 52—741 1 Claim

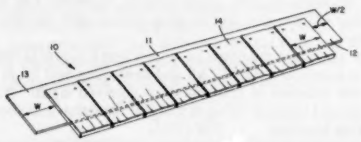


1. A method of installing a glazing frame assembly in a wall structure opening defined by spaced horizontal edges and spaced vertical edges comprising: placing a primary sill channel over the lower horizontal edge defining the lower end of the opening, placing a primary header channel over the upper horizontal edge defining the upper end of the opening; placing a pair of primary side jamb channels over the spaced vertical edges defining the sides of the opening; each of said channels having a longitudinal recess; said recesses being aligned to form a continuous recess along the inner peripheral surface of said frame assembly; positioning a glazing panel in said recess; and securing said glazing panel in position by placing a finishing sill against the lower end of said glazing panel and detachably interlocking said finishing sill to said primary sill channel, placing a finishing header against the upper end of said glazing panel and detachably interlocking said finishing header to said primary header channel, and placing a pair of locking jambs against the opposite sides of said glazing panel side jambs.

3,841,050
METHOD OF FABRICATING, SHIPPING AND INSTALLING A BUILDING EXTERIOR, PANEL CLOSURE

Otis M. Martin, San Jose, Calif., assignor to Ditz-Crane, San Francisco, Calif.

Continuation of Ser. No. 51,922, July 2, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,259
Int. Cl. E04c *2/10*, *2/40*
U.S. Cl. 52—745 1 Claim

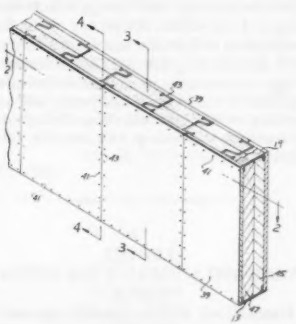


1. In a building construction method making use of a plurality of elongated panels assembled together to form a building exterior, the steps of: fixedly and permanently securing units of facing material to one side of sheathing or base strips, distributing the facing units along the length of the base strips whereby at one first end of each panel the facing units are spaced from the end of the sheathing strip a distance approximately equal to the full width of a normal facing unit, and whereby at the other second end of the panel the facing material is spaced from the corresponding end of the base strip a distance approximately equal to one-half of the width of a normal facing unit, temporarily and removably securing a normal full width facing unit to the base strip adjacent the first end thereof, temporarily and removably securing a one-half width facing unit to the base strip adjacent the second end thereof, thereafter abutting two panels end to end so that the first end of the sheathing of one panel abuts the second end of the sheathing of the other panel, removing the temporarily and removably secured full width unit of facing material adjacent the first end of the one panel sheathing, removing the one half width unit of facing material temporarily and removably secured to the sheathing of the one panel adjacent the second end thereof and fixedly and permanently securing the thus removed one half width unit of facing material adjacent the units of facing material fixedly secured to the sheathing of the one panel near the first end thereof so that the one half width unit of facing material is spaced from the first end by a distance equal to approximately one half of the width of a unit of facing material, removing the one half width unit of facing material temporarily and removably secured to the second end of the other panel sheathing, and fixedly and permanently securing the full width unit of facing material which was removed from the first end of the one panel sheathing to the first end of the sheathing of the one panel and to the second end of the sheathing of the other panel whereby the full width unit of facing material overlies the abutment of the sheathing of the first and second panels.

3,841,051
METHOD OF MAKING WALLS

Daniel L. Zinn, 2545 Beaufait, Detroit, Mich. 48207

Continuation of Ser. No. 257,943, May 30, 1972, abandoned, which is a division of Ser. No. 74,022, Sept. 21, 1970, abandoned. This application July 25, 1973, Ser. No. 382,605
Int. Cl. E04b *1/74*
U.S. Cl. 52—747 10 Claims



1. A method of constructing a sound attenuating wall between parallel fixed structures of a building comprising the steps of:

a. placing a series of double-flange elongated studs in lateral displacement between said structures, with each stud being so mounted and formed as to have a first flange of greater resiliency and a second flange of lesser resiliency, while arranging and mounting the studs in reversed alternation so that the more resilient flanges of spaced adjacent studs face in opposite directions and equally, the less resilient flanges of spaced adjacent studs also face in opposite directions; and the first flanges of one side of the wall are laterally and alternately displaced, and equally, the second flanges of one side of the wall are laterally and alternately displaced;

b. placing wall panels on one side of said series of studs so that the outer edges of adjacent panels are adjacent each other and the less resilient flanges and the central portions of panels on such side are adjacent the more resilient flanges;

c. and finally, affixing the outer edges of the wall panels on such side to the less resilient flanges on such side, with the central intermediate portions of the panels having resilient bearings at the more resilient flanges of such side.

3,841,052
SYSTEM FOR JOINING FURNITURE PANELS

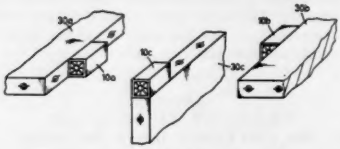
Werner Metz, Fredeburg, Germany, assignor to Burg-Mobel Dieter Ruddies, Fredeburg, Germany

Filed May 23, 1972, Ser. No. 256,101

Claims priority, application Germany, May 29, 1971, 2126955

Int. Cl. F16b *5/00*

U.S. Cl. 52—753 J **13 Claims**



1. A system for joining two or more panel members in abutting edge relationship comprising a plurality of substantially uniform tubular fittings each conforming in outer cross section to the thickness of said panels and having an axial bore, means for securing said fittings selectively along the abutting edges of said panels, at least one of said fittings being secured on each of said panels, said fittings being selectively arranged on said abutting panels at spaced intervals in axial abutting edge relationship to provide a continuous edge across at least a portion of the width of said panels, and an elongated rod conforming to said bore extending through each of said fittings to interlock said fittings and assemble said panels in joined relationship.

3,841,053
METHOD AND APPARATUS FOR DISPLAYING PRODUCT

Albert J. Weatherhead, III, Clevehand Heights, and William A. Loughley, Twinsburg, both of Ohio, assignors to Weatherchem Corporation, Twinsburg, Ohio

Filed Dec. 22, 1972, Ser. No. 317,374

Int. Cl. B65d *21/02, 85/62*

U.S. Cl. 53—23 **4 Claims**

1. A method of displaying a plurality of end closures of various lateral widths by a prospective seller of said end closures to a prospective purchaser of said end closures comprising providing a plurality of open ended tubular carriers of various lateral widths, cutting the carriers to different axial lengths so that the carrier of greatest lateral width has the greatest axial length and carriers of progressively smaller lateral width have progressively shorter axial lengths, mounting said end closures on only one end of said tubular carriers, arranging said tubular carriers in nested stacked relation with progressively smaller ones of said tubular carriers disposed within progressively larger ones of said tubular carriers, placing said nested stacked carriers in a shipping container, and closing said shipping container with an end closure of the same type which is carried by said carriers to demonstrate the durability of the end closures to the prospective purchaser.

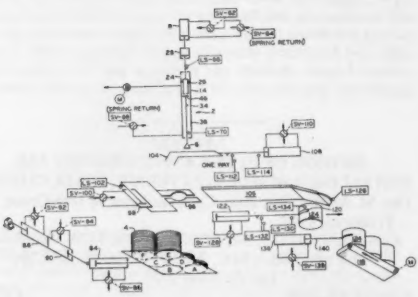
3,841,054
METHOD AND APPARATUS FOR AUTOMATICALLY CAPPING CARTON WITH LIDS

James K. Thompson, and Melvin R. Harrell, both of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1973, Ser. No. 336,474

Int. Cl. B65b *7/00, 65/08, 41/00*

U.S. Cl. 53—38 **22 Claims**



1. An apparatus for automatically removing lids from a plurality of lid stacks and capping cartons with the lids, comprising:

first means for moving a lid from a first location in response to a received signal "A" and depositing said lid at a second location in response to a received signal "B," said second location being at a higher elevation and above the first location;

second means for indexing a lid stack to the first location in response to a received signal "C;"

third means for moving a lid from the second location into a lid chute and moving lids along the chute in response thereto, said lid being moved in response to a received signal "D;"

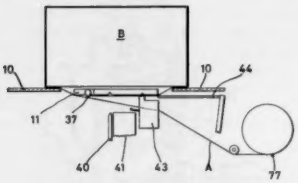
fourth means for capping a carton with a lid from the chute in response to a received signal "E;" and

means for transmitting said signals in response to preselected conditions.

3,841,055
PACKAGE BINDING MACHINE

Masaho Takami, No. 15, 1-chome, Aza-kitaura, Nishi-tomimatsu, Amagasaki-shi, Hyogo-ken, Japan

Filed Aug. 8, 1973, Ser. No. 386,505
Claims priority, application Japan, Aug. 30, 1973, 48-88161
Int. Cl. B65b *13/22, 13/32*
U.S. Cl. 53—198 R **8 Claims**



1. A package binding machine comprising a support table having an opening on which a package is rested, a base plate slidable below the level of said table in the opening thereof, a guide plate slidable below the base plate towards and away from the base plate, an elevatable first clamping element having a tape guide slit and a tape cutting heater which is adapted to project from the front face of the first clamping element according to the elevation thereof, a winder accommodating a roll of tape which is travelled below the guide plate through the tape guide slit and up to the table through the opening thereof around the package thereon and again below the table into the space between the base plate and the guide plate, said first clamping element being adapted to elevate and press the end portion of the tape against the base plate when the guide plate is removed away from the base plate after the tape is inserted between the base plate and the guide plate, an elevatable second clamping element in front of said first clamping element, said second clamping element being adapted to elevate so as to press the overlapping portions of the tape against the front portion of the base plate after constricting the tape around the package by the rotation of the winder, an elevatable pressing element between the first and second clamping elements, said pressing element being adapted to elevate when the first clamping element begins to descend after the second clamping element clamps the overlapping portions of the tape, and to engage the cutting heater still projecting from the first clamping element so as to press the cutting heater against the tape extending from the guide slit of the first clamping element to fuse the tape, a welding heater adapted to advance between the overlapping portions of the tape below the base plate after the tape is cut by the cutting heater, and to retreat from the overlapping portions of the tape after melting the opposed faces thereof pressed against the welding heater by the pressing element which further presses the overlapping portions of the tape against the base plate after retreatment of the welding heater, said pressing element and the second clamping element being lowered after adhering the overlapping portions of the tape, said base plate being removed from between the package and the tape wound therearound, and cam means controlling each mechanism of the machine in timed relation with each other.

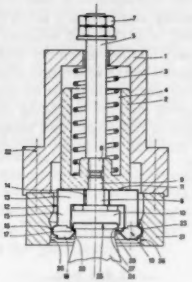
3,841,056
HEAD FOR CRIMPING METAL CAPS ON CONTAINERS

Roger Vandrebeck, Saint-Swin sur L'Isle, France, assignor to Cebal, Paris, France

Filed Nov. 23, 1973, Ser. No. 418,261
Claims priority, application France, Nov. 27, 1972, 72.42080
Int. Cl. B67b *3/10, 3/02, 3/18*
U.S. Cl. 53—331 **3 Claims**

1. A head for crimping metal caps onto containers having a neck provided with a crimping zone, said head comprising a casing in the form of a sleeve; a projection in the sleeve for holding the cap on the neck of the container, said projection being vertically displaceable, and returned by a spring; a floating ring surrounding the projection and carried therewith, said ring including a sleeve portion which carries an external annular guide rib and an internal crimping ring portion whose internal diameter is slightly greater than the external diameter of the crimping zone of the container, characterized by:

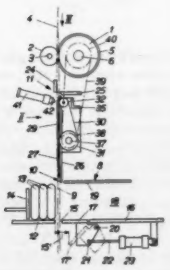
a helical ramp means in the lower part of the internal surface of the casing, the depth of said ramp means being constant and substantially equal to the height of the guide rib over at least one revolution, and then progressively decreasing, the width of said ramp means being greater than that of the rib, the rib being engaged at the moment of crimping in the ramp means such that, when the projection carries the floating ring inwardly of the casing, the ring moves in a circle about the axis of the casing, the ring remaining stationary in the vertical direction.



3,841,057
DEVICE FOR FEEDING WRAPPERS IN A PACKAGING MACHINE

Paul Engeler, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed June 20, 1973, Ser. No. 371,689
Claims priority, application Switzerland, July 3, 1972, 9929/72
Int. Cl. B65b *41/02*
U.S. Cl. 53—389 **5 Claims**



1. In a packaging machine for wrapping articles in a wrapper, said machine being of the type that has a folding channel provided with a floor; a slot provided in the floor of the folding channel and extending thereacross; a feeding device for advancing a wrapper sheet of indefinite length transversely through the folding channel and introducing the leading edge

of said wrapper sheet into the slot; a cutting mechanism disposed between said feeding device and said folding channel for severing said wrapper sheet when its leading edge is introduced into the slot; and means for moving an article along the folding channel against the wrapper positioned across the folding channel for folding the wrapper about the leading face of the article; the improvement comprising: complemental feeding means through which said wrapper sheet passes and by which said wrapper sheet is engaged on both of its faces, said complemental feeding means forming part of said feeding device; means on said complemental feeding means for providing at least one corrugation in said wrapper sheet, said corrugation extending longitudinally in the direction of feed of said wrapper sheet, whereby said wrapper sheet is rigidized downstream of said feeding assembly and said corrugation disappears subsequent to the severance of said wrapper sheet; a trap door forming part of the floor of said folding channel, said trap door having an edge bounding said slot; means for pivotally securing said trap door; and means for moving said trap door out of and into the plane of said floor to vary the width of said slot.

3,841,058

METHOD FOR THE PURIFICATION OF NATURAL GAS

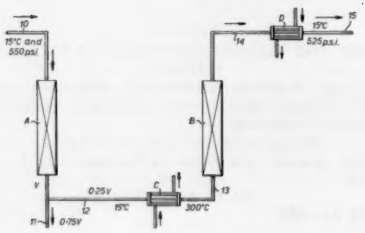
John Joseph Templeman, Solihull, England, assignor to British Gas Corporation, London, England

Filed Mar. 2, 1973, Ser. No. 337,533

Claims priority, application Great Britain, Mar. 3, 1972, 10180/72

Int. Cl. B01d *53/04*

U.S. Cl. 55—33 **6 Claims**



1. In a method of purifying natural gas to render the same suitable for liquefaction wherein water, methanol and carbon dioxide are absorbed therefrom using an absorbent material and thereafter the absorbent material is regenerated by the passage of gas therethrough, the improvement which consists essentially of absorbing water and methanol from a stream of natural gas containing such contaminants in a first bed of an absorbent material and subsequently absorbing carbon dioxide from said natural gas stream in a second bed of an absorbent material, the gas issuing from the first bed being cooled to a temperature of from 0° to 50°C before passing through the second bed, the absorbent material of the first bed being regenerated by passing dry gas therethrough at a temperature in the range of 250°C to 350°C and the material of the second bed being regenerated by passage therethrough of natural gas substantially free from water and methanol at a temperature not exceeding 100°C and by applying suction to the bed, and thereafter again purifying natural gas to remove water, methanol and carbon dioxide therefrom employing the regenerated absorbent materials.

3,841,059

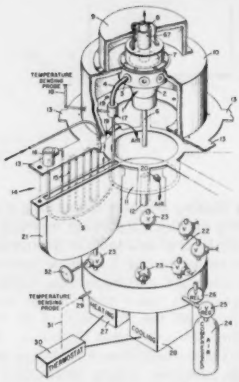
COMPRESSED AND THERMOSTATED AIR REGULATED GAS LIQUID CHROMATOGRAPHY OVEN WITH SIMULTANEOUSLY OPERATED MULTIPLE CHROMATOGRAPHY COLUMNS

William C. McCabe, 2535 W. 31st St. So., No. E, Wichita, Kans. 67217

Filed Sept. 25, 1972, Ser. No. 292,146

Int. Cl. B01d *15/08*

U.S. Cl. 55—197 **11 Claims**



1. An apparatus for performing simultaneous gas liquid chromatographic analyses on a plurality of samples comprising a plurality of micro ovens, a chromatography column contained in each of said ovens, said columns having an inlet and outlet means, said inlet having separate conduit means for sample and carrier gas, said outlet having a single conduit means for sample and carrier gas, a segment of conduit means for said carrier gas contained in each of said ovens and connected to the inlet of each of said chromatography columns; a valve assymbly contained in an insulated chamber having an aperature to each of said ovens, said valve assymbly having a plurality of inlets connected by conduit means to the outlet of each of said columns, said valve means containing passage means sequentially connecting one of said columns to a detector means and the other of said columns to a waste outlet means; a chromatography column micro oven, compressed air heating means comprising a tank for holding compressed and thermostated air with a plurality of outlets each connected to one of said ovens, an air temperature and pressure regulating means for said compressed air tank and a plurality of air flow regulating means in the said connections between said tank and each of said ovens.

3,841,060

GAS WASHER APPARATUS

John G. Hoad, Dearborn, Mich., assignor to Hoad Engineers, Incorporated, Ypsilanti, Mich.

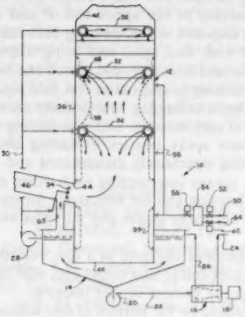
Filed Apr. 27, 1973, Ser. No. 354,952

Int. Cl. B01d *47/00*

U.S. Cl. 55—220 **2 Claims**

1. Apparatus for recovering or removing entrained particulate matter from gases comprising a settling basin, and a wet scrubber mounted over said settling basin, said scrubber having a tower free of a bottom wall so as to be completely open at the bottom to said settling basin, open at the top to exhaust and open adjacent to its bottom to a source of said gases, liquid spray means mounted in said tower for spraying liquid counter-current into contact with gases rising in said tower to remove the particulate matter therefrom by gravity directly to said settling basin, said tower having an outer shell and an

elastic liner, means for introducing a pressurizing medium between said liner and said shell to distort said liner to loosen accumulated matter therefrom for discharge by gravity directly to said basin, said elastic liner being porous to permit discharge of the pressurized medium through said liner to aid in removal of the accumulated matter from the liner, said



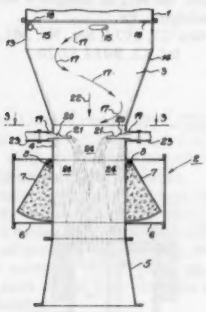
liquid spray means including a plurality of circular conduits located adjacent to the inner surface of said liner, said conduits containing apertures for discharging spray liquid into said gases and to deliver liquid essentially tangentially against the inner surface of said liner to aid in removal of the accumulated matter from the liner.

3,841,061

GAS CLEANING APPARATUS

Daniel E. Pike, Harrington Park, N.J., assignor to Air Pollution Industries, Incorporated, Englewood, N.J.

Filed Nov. 24, 1972, Ser. No. 309,093
Int. Cl. B01d *47/10*
U.S. Cl. 55—223 **10 Claims**



1. Apparatus for removing contaminants from a flowing stream of gas, said apparatus comprising:

a. vertical conduit means having upper inlet end means for receiving a downwardly flowing stream of gas from which contaminants are to be removed and lower outlet end means discharging said stream of gas,

b. trough pipe means extending through the wall of said conduit means between the inlet end means and the outlet end means thereof and directed toward the longitudinal axis of said conduit means,

c. part of said trough pipe means within said conduit means being formed as an open-ended trough laterally bounded by side walls, the open end of said trough being directed toward the longitudinal axis of said conduit means, the trough facing upwardly toward the inlet end means of said conduit means,

d. wash liquid conduit means connected to said trough pipe means delivering wash liquid to said trough pipe means,

e. whereby said trough pipe means delivers wash liquid into the interior of said conduit means, said wash liquid in part flowing from the open end of said trough pipe means into said conduit means, the stream of gas picking up discrete masses of wash liquid over the side walls of said trough and carrying said discrete masses of wash liquid into said conduit means, said wash liquid from said trough pipe means forming descending curtains of wash liquid extending across less than all of the transverse cross-section of said conduit means in the region of said trough pipe means, the balance of said transverse cross-section providing unobstructed openings leading to vertical channels at least partially bounded by said descending curtains of wash liquid,

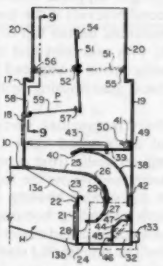
f. whereby said gas stream descends through the said vertical channels and contaminants in said gas stream impinge upon the surfaces of the descending curtains of wash liquid bounding said vertical channels and are thereby removed from the gas stream.

3,841,062

GREASE EXTRACTION VENTILATOR

Victor D. Molitor, Denver, and Arlen W. Gallagher, Arvada, both of Colo., assignors to Stainless Equipment Co., Englewood, Colo.

Filed Dec. 11, 1972, Ser. No. 314,278
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 **15 Claims**



1. A grease extraction ventilator connectable to a duct having means for producing flow of an air stream into a front entrance space of said ventilator, through said ventilator and from said ventilator into said duct, said air stream normally containing products of cooking in an area adjacent said entrance space, such as smoke particles, grease and the like, said ventilator comprising a housing having:

a. a chamber below said front entrance space and having a front wall;

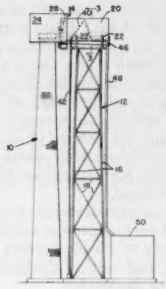
b. means for supplying water to said chamber; and

c. means for causing said air stream to engage and agitate said water, thereby causing said water and water vapor produced by said agitation to tend to remove smoke particles, grease and the like from said air stream, including baffle means spaced from said front wall and forming the rear wall of said front entrance space, said baffle means extending rearwardly and downwardly to a point below the upper edge of said front wall and then forwardly toward said front wall.

3,841,063
AIR TREATING APPARATUS

Larry R. Absher, and Richard M. Woodie, both of Sparta, N.C. 28675

Filed Nov. 8, 1971, Ser. No. 196,452
Int. Cl. B01d 47/06
U.S. Cl. 55—228 3 Claims



1. An apparatus comprising: a smoke stack; an elongated, cylindrical barrel like configured, generally hollow, substantially unobstructed housing disposed with its longitudinal axis extending horizontally, said housing having an inlet end and an outlet end, both of said ends being substantially open;

first brackets comprising a pair of brackets secured to opposite exterior sides of said housing at a point between said inlet end and said outlet end, said point being closely adjacent to said inlet end;

a tower disposed closely adjacent to, substantially parallel to and coextensive with said stack, said tower including a plurality of upright supports interconnected by cross bracing, and second brackets at the top of said tower, said housing being mounted on the top of said tower on said second brackets with said inlet end of said housing disposed closely adjacent to but spaced apart from the top of said smokestack, said housing being supported solely by said tower;

a pair of substantially rectangular, vertically disposed side boards disposed at opposed sides of said stack, said boards extending vertically from a point below the bottom of said housing and below the top of said stack to a point above the top of said housing and the top of said stack, said boards extending horizontally from a point between said inlet end and said outlet end of said housing to a point beyond the side of said stack remote from said housing, each of said boards being secured to a respective one of said first brackets, each of said boards extending closely adjacent to, but spaced apart from said stack, said boards being the sole means for preventing cross winds from blowing smoke away from said housing;

fan support members disposed in said housing closely adjacent to said inlet end;

a rotatable fan shaft, coaxial with said housing and rotatably mounted in said support members, said shaft extending from a first end thereof disposed between said members and said outlet end to a second end thereof disposed between said stack and said inlet end;

a fan mounted on said first end of said shaft, said fan being operatively constructed and arranged for drawing smoke from the top of said stack into said inlet end and blowing said smoke through said housing and out said outlet end;

a pulley mounted on said second end of said shaft;

a variable speed electric motor mounted on the bottom of said housing closely adjacent to said inlet end thereof, said motor having a horizontally extending drive shaft which extends from said motor to a point between said inlet end and said stack;

belt means drivingly connecting said pully and drive shaft for rotation of said fan;

a water source disposed at the base of said tower; said source being disposed between said tower and said stack; a conduit extending from said source to said, housing at a point closely adjacent to the bottom thereof, said conduit being disposed between said tower and said stack;

a pipe having an open end and a closed end, said open end being connected to the upper end of said conduit, said pipe being disposed in said housing between said fan and said outlet end, said open end being disposed in close proximity to said inlet and, said closed end being disposed in close proximity to said outlet end, said pipe being in the form of a helix extending substantially around the inner periphery of said housing, said pipe having a plurality of high pressure spray nozzles extending therefrom, said nozzles being operatively constructed and arranged for producing sprays intersecting each other and staggered down the housing and for effectively forming a wall into which the discharge gasses and particles are directed by said fan;

a series of openings disposed in a row extending generally from said inlet end to said outlet end, said openings being disposed in the bottom of said housing;

a trough mounded on the bottom of said housing below said openings for receiving liquid draining through said openings, said trough having a tapered base portion which is lower at the end of said trough adjacent said outlet end than it is at the end of said trough adjacent said inlet end; a liquid filter mechanism disposed at the bottom of said tower on the side thereof remote from said stack;

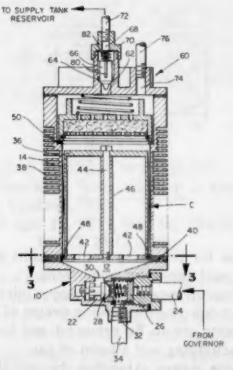
a drain pipe means extending from the lower end of said trough to said filter; and

a generally crescent shaped plate means disposed in the lower portion of said outlet end of said housing for preventing the spray water from escaping from said housing and for direction the cleaned gases upward.

3,841,064
AFTERCOOLER

Joseph A. Hitchiner, Warminster; Lawrence H. Brown, Ambler; Monte R. Blodgett, Philadelphia, and David S. Brown, Cornwell Heights, all of Pa., assignors to Edgcomb Steel Company, Philadelphia, Pa.

Filed Oct. 27, 1972, Ser. No. 301,615
Int. Cl. B01d 53/26
U.S. Cl. 55—269 7 Claims



1. An aftercooler for cooling and cleaning compressed air, comprising: a housing having an inlet and an outlet and means therebetween for cooling air passing from the inlet through

the outlet; and a header juxtaposed to the inlet comprising a body defining a cavity therein communicating with the inlet having a port therein communicating with a passage through said header to permit fluid flow communication with a source of compressed air; said header having a second passage therein containing discharge valve means to permit the discharge of fluid from said second passage; said header having a port communicating with said second passage from said cavity to permit the flow of liquid from said cavity into said second passage through said port; said valve means being completely disposed within the body of said header and being separated from said first mentioned passage by a wall integrally formed in said header in direct heat transfer relation to said first passage and said cavity in sufficient proximity to said first mentioned passage to prevent freezing of said fluid on the surfaces of said valve means.

3,841,065

PNEUMATIC CONTROL SYSTEM FOR AIR FILTER CLEANING APPARATUS

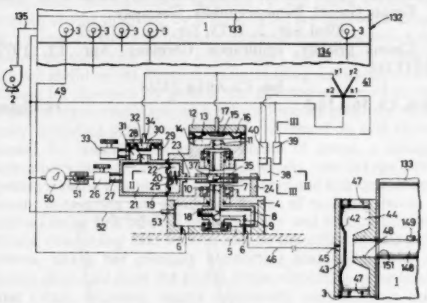
Frans Joris Espeel, Oberuzwil, Switzerland, assignor to Gebrueder Buehler A.G., Uzwil, Switzerland

Division of Ser. No. 272,194, July 17, 1972. This application Mar. 18, 1974, Ser. No. 451,907

Claims priority, application Switzerland, July 20, 1971, 10639/71

Int. Cl. B01d *46/04*

U.S. Cl. 55—284 **5 Claims**



1. Dust removal means comprising:

a. casing means defining, a dust laden air chamber having an inlet, a clean air pressure chamber, and a clear air discharge chamber having an outlet;

b. a dust removal outlet from said dust laden air chamber;

c. a plurality of hollow filter elements in said dust laden air chamber having their interiors in communication with said clean air pressure and discharge chambers;

d. individual normally closed valve means between the interior of each of said filter elements and said clean air pressure chamber;

e. filter cleaning means for cleaning said filter, comprising an inlet to said clean air pressure chamber adapted to be connected to a pressure source of clean air;

f. and control means for said filter cleaning means, comprising:

1. a plurality of quick opening valves connected to said valve means and operative to open selected ones of said valve means,

2. a housing defining a pressure chamber having a plurality of outlet ports each adapted to be connected to a different one of said quick opening valves, and an inlet port for connection to a source of air under pressure,

3. a control arm in said chamber, said control arm having an outer end and an inner end portion, and an air passage extending longitudinally therethrough, said outer end being disposed to engage said housing adjacent said outlet ports,

4. means mounting said control arm in said housing for intermittent movements of said arm in a direction whereby said air passage registers at the outer end of the arm successively with each of said outlet ports,

5. a pneumatically operated valve communicating with said valve passage at the inner end portion of said control arm,

6. control arm operating means for imparting said intermittent movement to said arm and including an actuator movable alternately in opposite direction.

7. and a pneumatic circuit including said pressure source and other valve means for opening said pneumatically operated valve to permit air to escape therethrough from each of said quick opening valves in succession responsive to movements of said actuator in one direction and to close said pneumatically operated valve responsive to movements of said actuator in an opposite direction and during movement of said arm from each outlet port to the next succeeding outlet port.

3,841,066

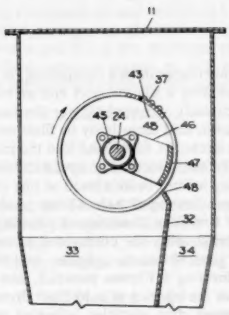
GAS CLEANING APPARATUS

Nicholas P. Wakeen, Holden, Mass., assignor to Norman S. Blodgett, Worcester, Mass., a part interest

Continuation of Ser. No. 150,450, June 7, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 388,040

Int. Cl. B01d *46/04*

U.S. Cl. 55—290 **2 Claims**



1. A gas cleaning apparatus, comprising:

a. a chamber,

b. a hollow drum mounted in the chamber for rotation about its axis, the drum being provided with a foraminous wall,

c. means for introducing gas with fine solid particles in suspension into a first section of the chamber located within the lower portion of the chamber externally of the drum,

d. means for removing gas from the interior of the drum,

e. a baffle located within the drum to block off the foramina in a substantial area of the drum,

f. a foraminous coating which covers the exterior of the foraminous wall, the coating having foramina of relatively smaller size than those of the wall, and

g. a partition having an edge, the partition separating the first section of the chamber from a second section of the chamber which lies outside of the drum, in the lower

portion of the chamber and adjacent the baffle, and the edge being parallel to the axis of the drum and adjacent to both the wall and the baffle, the edge being spaced from the wall a distance sufficient to remove extraneous accumulated solid particles from the outer surface of the wall.

3,841,067

ELECTRIC VACUUM CLEANER

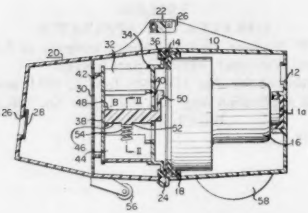
Satoru Kato, and Isamu Tayama, both of Ojima-machi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,112

Claims priority, application Japan, Sept. 5, 1972, 47-102956

Int. Cl. B01d *46/04*

U.S. Cl. 55—300 **3 Claims**



1. An electric cleaner device comprising, in combination, a main body including a suction port and an exhaust port and having an electrically operated blower disposed therein, filter means disposed in said main body to filter out dust particles contained in a stream of air sucked into the main body during the operation of said electrically operated blower, said filter means including a filter drum closed at one end and open at the other communicating with the blower produced by folding a flat piece of fine filter sheet into a plurality of continuous waves and then shaping the corrugated piece of filter sheet into a hollow, general circular cylinder, said filter sheet being prepared by forming a fibrous material, and dusting means disposed within the interior of said filter drum to vibrate the filter and remove dust particles adhering to the filtration surface of said filter drum.

3,841,068

METHOD AND APPARATUS FOR ORIENTING AND HARVESTING TOBACCO LEAVES

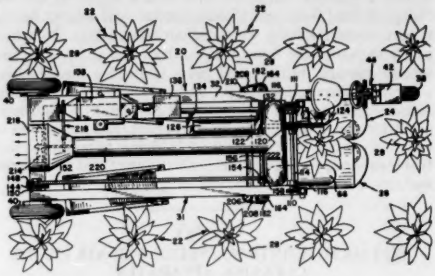
Robert H. Rakestraw, Rt. 3, Madison, N.C. 27025

Division of Ser. No. 12,291, Feb. 18, 1970, Pat. No. 3,754,382. This application Aug. 20, 1973, Ser. No. 389,817

Int. Cl. A01d *45/16*

U.S. Cl. 56—1 **6 Claims**

1. The method of orienting and harvesting tobacco leaves from rows of standing tobacco plants, each plant including a main stalk and multiple leaves radiating from the main stalk around the circumference thereof comprising the steps of: directing preselected leaves in prescribed directions by fluid pressure, removing the preselected leaves from the main stalks of the plants while extended in the prescribed directions by applying a downward force to the leaves to facilitate separation of the leaves from the stalk, and conveying the removed tobacco leaves in a prescribed manner.



3,841,069

ELECTRICALLY DRIVEN LAWN MOWER

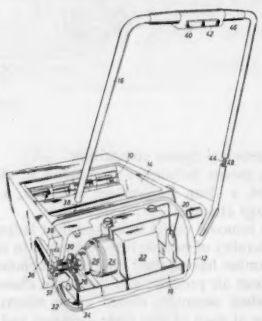
Manfred Weck, Betzdorf, Sieg, Germany, assignor to Wolf-Gerate GmbH, Bundesrepublik, Germany

Filed Apr. 2, 1973, Ser. No. 347,207

Claims priority, application Germany, Apr. 11, 1972, 2217351

Int. Cl. A01d *35/24*

U.S. Cl. 56—10.5 **10 Claims**



1. A power lawn mower, comprising:

cutting parts; ground engaging means comprising a hollow cylinder; an electric motor within said cylinder and connected with said ground engaging means cylinder for driving same; means operatively connecting said ground engaging means and said cutting parts for causing said ground engaging means to drive said cutting parts;

a plural position control device connected to said motor for causing stepless variation in the speed of said motor by adjusting the position of said control device;

a hand operated and hand engaged clutch connecting between said motor and said ground engaging means; said clutch being within said cylinder.

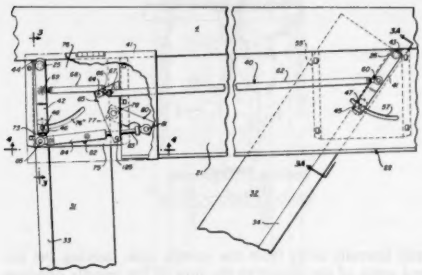
3,841,070
WINDROW PLACEMENT DEVICE AND HARVESTING METHOD

Thomas J. Scarnato, Barrington; George B. Cicci, Broadview, and Martin H. Meyer, Elburn, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 277,193, Aug. 2, 1972, abandoned, which is a continuation of Ser. No. 78,721, Oct. 7, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,040

Int. Cl. A01d *45/02*

U.S. Cl. 56—14.4 **15 Claims**



1. A harvesting machine, frame means, harvesting means comprising cutting means mounted on the frame means for cutting swaths of crops, by a for moving the harvested crops in an upward and a rearwardly directed stream, windrowing means on the frame means comprising a horizontally extending top shield on the frame means extending rearwardly of the stream for downwardly guiding the directed stream of crops, a pair of transversely spaced windrow forming generally vertically extending side sheets pivotally mounted on said frame means for laterally guiding the stream of crops, a linkage operatively interconnecting said side sheets, said linkage comprising a swing link pivoted on said frame and link connecting means connecting said swing link to one of said side sheets, a second swing link pivoted on said frame and link connecting means connecting said second link to the other of said side sheets, and a bar pivotally connecting said swing links at points displaced from the pivots of the respective swing links, and rotary actuating means operatively connected to said linkage for positioning said side sheets in selected laterally displaced positions for depositing the crops in windrows, said rotary actuating means comprising an electric motor having an output shaft and mounted on one of said swing links, a drive gear fixedly attached to said output shaft, a spur gear matingly engaged with said drive gear, means for mounting said spur gear to a pinion shaft rotatably mounted to one of said swing links, a pinion gear affixed to said pinion shaft, and a gear affixed relative to said frame and matingly engaged with said pinion gear.

3,841,071
TOBACCO HARVESTER

Jesse R. Pinkham; Arthur G. Cockman, both of Winston-Salem, and Jerry Ray Joyce, Kernersville, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 100,958, Dec. 23, 1970, abandoned. This application June 5, 1972, Ser. No. 259,899

Int. Cl. A01d *45/16*

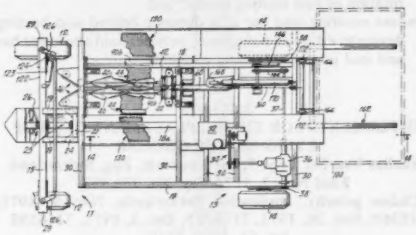
U.S. Cl. 56—27.5 **25 Claims**

1. Apparatus for harvesting tobacco leaves, comprising

a. a vehicle adapted to pass along a row of tobacco plants;

b. a pair of spaced elongated defoliators mounted on said vehicle, which defoliators define therebetween a plant passageway, said defoliators being rotatable about axes extending along said passageway, said defoliators being operable to engage leaves on tobacco plants in the passageway, strip the leaves from the stalks, and drop the leaves;

c. leaf removal means located on the vehicle adjacent the defoliators for catching and removing leaves stripped from plants and dropped by said defoliators, said leaf removal means comprising a pair of wire chain conveyors located on opposite sides of said plant passageway and each inclined upwardly from a receiving end under a defoliator to a discharge end from which the leaves are dropped, each said conveyor comprising a plurality of



parallel spaced bars linked at their ends, said bars extending parallel to the plant passageway;

d. a pair of longitudinal conveyor means on the vehicle, each positioned laterally outwardly from one of said wire chain conveyors and extending from a receiving end below the discharge end of said one wire chain conveyor, to a discharge end above the normal height of tobacco plants, from which discharge end the leaves are dropped; and

e. a collecting receptacle on said vehicle in a position bridging the plant passageway above the normal height of tobacco plants and below the discharge ends of said pair of longitudinal conveyor means, so as to catch the leaves dropped from both longitudinal conveyor means.

3,841,072
METHOD AND APPARATUS FOR CUTTING SUGAR CANE

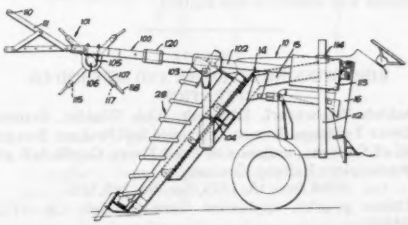
John Colin Hudson, St. Thomas, Barbados, assignor to F. M. McConnel Limited, Shropshire, England

Filed Aug. 29, 1972, Ser. No. 284,596

Claims priority, application Great Britain, May 2, 1972, 20461/72

Int. Cl. A01d *47/00*

U.S. Cl. 56—51 **3 Claims**



1. Apparatus for removing the leafy tops of sugar cane stalks, the apparatus comprising in combination:

a rotatable beating device;

mounting means for mounting said beating device on a

propelling vehicle and providing an axis of rotation for said beating device, said axis extending transversely to the direction of travel of said vehicle and being at a distance above ground level;

counterbalancing means allowing the device to freely move up and down relative to the vehicle in response to differences in cane stalk height encountered during the topping process;

said beating device including a plurality of beating elements, said beating elements being spaced around said axis of rotation and extending along said axis;

means to effect power driven rotation of said beating device;

an elongate abutment bar extending parallel to said axis of rotation of said beating device; and

means securing said bar at a distance behind said beating device to establish a clearance between said abutment bar and said rotatable beating elements.

3,841,073

IMPLEMENTS FOR THE DISPLACEMENT OF CROP LYING ON THE GROUND

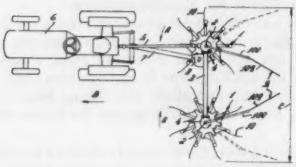
Cornelius Van Der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Nov. 7, 1972, Ser. No. 304,382

Claims priority, application Netherlands, Nov. 9, 1971, 7115369; Nov. 26, 1971, 7116333; Dec. 2, 1971, 7116555

Int. Cl. A01d *79/02*

U.S. Cl. 56—370 **52 Claims**



1. A raking implement for the displacement of crop lying on the ground, comprising a frame and at least one rake member rotatably mounted on an upwardly extending shaft supported on said frame, said rake member having radial arms by tines pivotably secured adjacent the outer portions of said arms and said arms being operatively associated with driving means for rotation, said arms being interconnected with two rotatable and relatively displaceable elements located adjacent said shaft, said driving means including a first of said elements, the second element being linked with the first element through pivot connections to said tines, whereby, the torque of rotation displaces said elements with respect to one another and pivots said tines from one position to another, stop means on said rake member to limit the relative displacement of said elements with respect to one another.

3,841,074

RING SPINNING MACHINE AND METHOD OF OPERATION

Friedrich Wachendorf, Eddestedt; Alois Winkler, Bremen; Dieter Twillman, Bremen-Farge, and Rolf Neubert, Bremen, all of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Germany

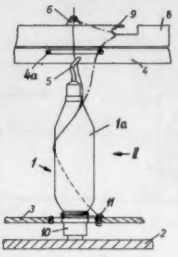
Filed June 13, 1973, Ser. No. 369,728

Claims priority, application Germany, July 18, 1972, 2235165

Int. Cl. D01h *1/38*

U.S. Cl. 57—34 TT **5 Claims**

1. A method of operating a ring spinning machine having a spinning mount with a spinning finger, said method insuring that the outer axial surfaces of a cop wound on a spool and ready for removal from the machine will be completely disengaged from the thread leading to the respective spindle of the machine, said method comprising: disengaging the spindle from the drive therefor, at a predetermined speed of rotation of the spindle braking the spindle while simultaneously tilting the thread guide through which the thread is guided to the spindle upwardly and laterally away from the axis of the spindle whereby the thread disengages from the spinning finger, turning the spindle backwardly a predetermined amount, engaging the thread at a point adjacent the thread guide on the spindle side thereof and moving the engaged point of the



thread laterally away from the spindle axis, moving the engaged point of the thread to the foot of the spindle opposite the end of the spindle nearest the thread guide, again turning the spindle backwardly whereby any thread between the said engaged point and the draft bucket at the foot of the spindle which is looped on the outer axial surface of the cop will drop free of the cop thereby permitting the cop to be removed from the spindle without breaking the thread between the thread guide and the draft bucket and exposing the spindle to receive an empty cop spool, releasing the thread at said engaged point, and turning the spindle forwardly prior to winding the new cop to eliminate slack in the thread.

3,841,075

OPENING-UP DRUM FOR AN OPEN END SPINNING DEVICE

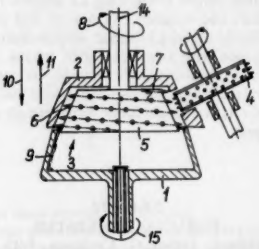
Gerhard Kutscher; Josef Droge; Rolf Wehling, and Rolf Neubert, all of Bremen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 11, 1973, Ser. No. 349,967

Claims priority, application Germany, Apr. 15, 1972, 2218321

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.91 **5 Claims**

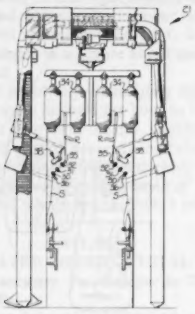


1. In combination with a spinning turbine, a rotatable opening-up drum on the circumferential surface of which the individual fibers are movable jointly in circumferential as well as in axial direction of said spinning turbine, said circumferential surface of said opening-up drum being provided with helically arranged elevations which when viewed in the direction of rotation of said opening-up drum ascend in that axial direction of said drum which is opposite to the direction of the axial movement of the individual fibers on said drum.

3,841,076
ROVING FEED STOP DEVICE

Maynard Ford, Fitchburg, Mass., and Charles D. Lee, Jr., Charlotte, N.C., assignors to Parks-Cramer Company, Fitchburg, Mass.

Continuation-in-part of Ser. No. 201,303, Nov. 23, 1971, Pat. No. 3,726,072. This application Feb. 9, 1973, Ser. No. 331,053
Int. Cl. D01h *13/16*
U.S. Cl. 57—83 5 Claims



1. In combination with a textile yarn spinning machine having a plurality of drafting systems arranged in a series for normally receiving a corresponding series of roving strands and delivering a corresponding series of attenuated strands, apparatus for stopping feeding of a roving strand to a drafting system in the event of breakage of the attenuated strand issuing therefrom, the apparatus comprising:

a plurality of roving feed stop members corresponding in number to the number of said drafting systems, each of said stop members being mounted on said spinning machine adjacent a corresponding drafting system for independent movement between a first position withdrawn from engagement with the corresponding roving strand and a second position intersecting and engaging said corresponding roving strand and further having roving engaging surfaces converging to define a cusp into which said corresponding roving strand enters on movement of said stop member to said second position, and

means operatively connected with each of said roving feed stop members and responsive to actuation thereof for identifiably accumulating occurrences of supply strand interruption over an interval of time and for thereby facilitating identification of portions of the yarn forming machine requiring corrective maintenance.

3,841,077
SPINDLE ARRANGEMENT

Paul Krauss, Ebersbach, and Gustav Fetzer, Gingen, both of Germany, assignors to Zinser-Textilmaschinen GmbH, Ebersbach, Germany

Filed June 4, 1973, Ser. No. 366,314
Claims priority, application Germany, June 9, 1972, 2228246
Int. Cl. D01h *7/12*
U.S. Cl. 57—135 10 Claims

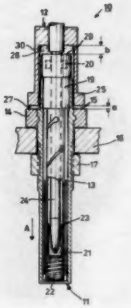
1. A spindle arrangement, particularly useful in conjunction with spinning machines, twisting machines and the like, comprising, in combination:

a. a spindle rail;

b. a bearing housing attached to said spindle rail, said bearing housing including flange means having an upper surface above said spindle rail, which surface serves as an abutment;

c. a spindle top rotatably mounted in said bearing housing, said spindle top including a spindle shaft and a whorl, said whorl having a lower surface positioned in the vicinity of said upper surface of said flange means and spaced therefrom by a given maximum distance;

d. a base-bearing located within said bearing housing, an end of said spindle shaft being supported by said base-bearing; and



e. resilient means located within said bearing housing in a space greater in length then said given maximum distance for resiliently supporting said base-bearing and allowing downward movement of said spindle shaft and said base-bearing;

whereby the flange means on the bearing housing serves as the abutment to limit axial mobility of the spindle shaft in the downward direction against the force of the resilient means to the given maximum distance.

3,841,078
SLUB YARN AND METHOD OF FORMING A SLUB YARN

Dawes Coolidge Hartsog, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1973, Ser. No. 327,441
Int. Cl. D02g *3/34*
U.S. Cl. 57—139 4 Claims

1. A process for preparing slub yarn comprising:

a. blending synthetic fibers with bonded, nonwoven wafers of synthetic fiber to form a fibrous sheet in the weight percent of 85–98 weight percent staple fibers and 2–15 weight percent wafers,

b. passing the sheet through a carding machine and applying sufficient energy to break the wafers into fibrous masses of bonded fibers entangled with the staple fibers without destroying all fiber bonds, thereby obtaining a carded web, and

c. subjecting the carded web to staple spinning and drafting operations whereby the web is processed into slub yarn.

3,841,079
CARBON FILAMENTS CAPABLE OF SUBSTANTIAL CRACK DIVERSION DURING FRACTURE

Michael J. Ram, West Orange, and John P. Riggs, Berkley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

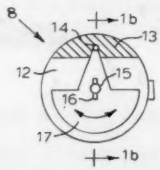
Continuation-in-part of Ser. No. 28,545, April 14, 1970, Pat. No. 3,657,409. This application Apr. 17, 1972, Ser. No. 244,544
Int. Cl. D02g *3/02*
U.S. Cl. 57—140 R 10 Claims

1. An improved carbon filament comprising at least 90 percent carbon by weight having an unusually highly developed microporous and fibrillar internal structure substantially coextensive with the length of said filament capable of diverting a propagating crack during fracture thereby increasing the amount of work required to break the filament as evidenced by a mean apparent fracture surface energy of at least 50 joules per square meter.

3,841,080
WATCH DISPLAY SWITCH

Burton T. O'Donald, 7805 S.W. 102 Pl., Miami, Fla. 33143

Filed Nov. 19, 1973, Ser. No. 417,424
Int. Cl. G04c *3/00*, *23/12*; G04b *19/30*
U.S. Cl. 58—23 BA 5 Claims

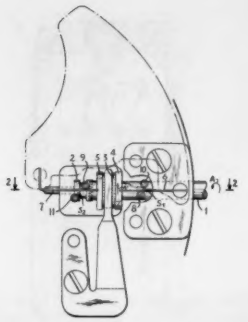


1. A wrist watch including in combination, a circuit comprising a switch means in series with a power source and a light emitting means, said switch means including a fixed arm and a movable arm, means mounting said movable arm and effective to close the switch means by moving the movable arm into engagement with the fixed arm when the watch is in one attitude and effective to open the switch means when not in said attitude.

3,841,081
ELECTRONIC WATCH WITH A TIME DISPLAY CORRECTING DEVICE

Shojiro Komaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed July 10, 1973, Ser. No. 377,970
Claims priority, application Japan, July 10, 1972, 47-68915
Int. Cl. G04c *3/00*; G04b *27/00*
U.S. Cl. 58—23 R 5 Claims

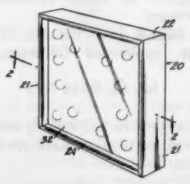


1. An electronic watch with a time display correcting device for use in correcting the time display thereof, comprising an oscillator producing a signal of relatively high frequency, a divider receptive of the signal from said oscillator for generating a time signal pulse train, means receptive of the time signal pulse train from said divider for effecting a time display, means for correcting the time display selectively switchable into an advancing and a delaying mode comprising means for developing and superposing an additional pulse onto said time signal pulse train during a predetermined interval of time when the correcting means is in the time display correction advancing mode and for inhibiting a pulse from said time pulse train during said predetermined interval of time when said correcting means is in the time display correction delaying mode whereby the time display is advanced or delayed by said predetermined interval of time to effect the time display correction, and switching means for selectively switching said correcting means into one of said advancing and delaying modes.

3,841,082
BINARY CLOCK

John W. Cuevas, 91 Rosaire Pl., Cross-Creek Pkwy., Atlanta, Ga. 30327, and Harley W. Jones, 3783 N. Decatur Rd., Decatur, Ga. 30341

Filed Jan. 13, 1972, Ser. No. 217,620
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R 4 Claims



1. A clock comprising:
an open front enclosure;

a translucent masking member closing the open front of said enclosure which is dark in the absence of illumination therebehind;

a first ordered array of four light sources mounted in said enclosure behind said masking member corresponding to the binary number of 1, 2, 4 and 8;

a second ordered array of four light sources mounted in said enclosure behind said masking member corresponding to the binary numbers of 1, 2, 4, and 8, said first and second arrays separated from each other and located along a common circular path;

a third ordered array of four light sources mounted in said enclosure behind said masking member corresponding to the conventional arabic numbers of 1, 2, 3 and 4, said third array arranged in a square about said first and second arrays; and,

timing means for selectively illuminating said light sources of said first array to indicate the hour by binary numbers in each 12 hour interval of the day, illuminating said light sources of said second array to indicate the 5 minute interval by binary numbers within the hour, and illuminating said light sources of said third array to indicate the minute by arabic numbers within the 5 minute interval.

3,841,083

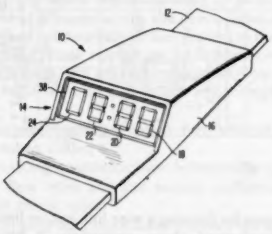
SELF-ILLUMINATED LIQUID CRYSTAL TIMEPIECE

John M. Bergey, Lancaster, Pa., assignor to Time Computer Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 119,806, March 1, 1971, Pat. No. 3,722,206, which is a continuation of Ser. No. 794,551, Jan. 28, 1969, abandoned. This application Jan. 5, 1973, Ser. No. 321,468

Int. Cl. G04b *19/30*

U.S. Cl. 58—50 R **9 Claims**



1. A display for an electrical timepiece operable under variable external lighting conditions comprising means for displaying time information in digital form including a field effect liquid crystal, a source of electrical timing signals, means for applying said electrical timing signals to at least a portion of said material to provide an electric field for displaying timing information under one external lighting condition, and an auxiliary self-powered light source adjacent said liquid crystal and providing light incident to said liquid crystal for displaying timing information under a second external lighting condition, said liquid crystal being positioned between a pair of light polarizers.

3,841,084

CALENDAR MECHANISM FOR TIME-PIECES

Cyril Vuill Eumier, Bienne, Switzerland, assignor to Societe Suisse pour L'Industrie Horlogere Management Services SA, Bienne, Switzerland

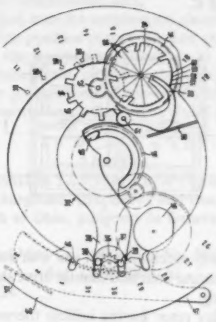
Filed Apr. 4, 1973, Ser. No. 347,623

Claims priority, application Switzerland, Apr. 5, 1972, 4947/72

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **8 Claims**

1. A calendar mechanism for timepieces with date indication through an opening in the dial and changing by instantaneous stepping, said mechanism comprising a date disc and advancing means for shifting said date disc by a predetermined number of steps once every 24 hours, said advancing means including a main lever having at one end thereof an advancing and locking mechanism for cooperation with said date disc and further having a cam surface, a gudgeon responsive to a dial train of the time-piece for coaction with said cam



surface once every 24 hours to set and then to release said main lever, a month cam, a part of said main lever cooperating with said month cam during release thereof from said gudgeon for determining the displacement of said date disc by said main lever according to the length of the month, and advancing means controlled by said date disc for advancing said month cam at the end of every month.

3,841,085

WATERTIGHT WATCH CASE

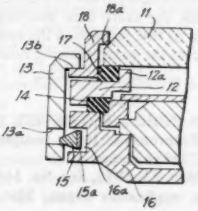
Tatsuro Akahane, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 6, 1973, Ser. No. 413,292

Claims priority, application Japan, Nov. 8, 1972, 47-128619

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 R **4 Claims**

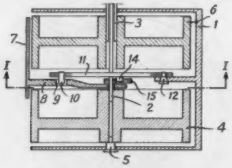


1. A water-tight watch case comprises a crystal, a frame supporting said crystal, a first gasket between said crystal and said frame for a water-tight joint there between, an inner case frame and said inner case body for a water-tight joint there between and means for biasing said crystal axially inwardly toward said inner case body with an effective force for thereby making said joints water-tight, said biasing means including an outer case body and a compression spring cooperating therewith, said compression spring acting radially on said outer case body for biasing said outer case body cooperatively toward said inner case body, said outer case body being arranged to bias said crystal simultaneously toward said inner case body.

3,841,086
TIME DISPLAY MECHANISM

Maurice Robin, 15 ter, Allee de la Pepiniere, 92 Suresnes, France

Filed Nov. 6, 1973, Ser. No. 413,243
Claims priority, application France, Nov. 17, 1972, 72.40990
Int. Cl. G04b 19/02
U.S. Cl. 58—125 C 10 Claims



1. A time display mechanism for use with a timepiece movement having separate hour and minute drive shafts, said mechanism comprising:

a. a first display rotor having indicia thereon representing hours and means for mounting said first display rotor on said hour shaft for rotation therewith;

b. a second display rotor having indicia thereon representing 0 to 60 minutes with a spacing between a sixty minute mark and a zero minute mark equivalent to the spacing between two successive hour markings on the first display rotor and means for mounting said second display rotor on said minute shaft for rotation therewith;

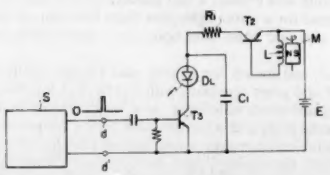
c. an indicator mounted over said first and second display rotors to indicate the time in hours and minutes, said indicator being mounted for movement between first and second positions spaced apart by a distance equivalent to said spacing between two successive hour markings; and

d. indicator moving means for moving said indicator in the same direction as said first display rotor from said first position to said second position during each hour and for rapidly shifting said indicator from said second position back to said first position at the end of each hour, whereby the indicator is moved from said first position to said second position at a speed which is a function of the speed of the first display rotor to maintain said indicator substantially on the same hour marking and is rapidly shifted back to its first position at the end of each hour in order to indicate the next following hour.

3,841,087
IN-OPERATION INDICATING DEVICE FOR CLOCKS

Tomio Kikuchi, Tokorozawa, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo, Japan

Filed Mar. 23, 1973, Ser. No. 344,082
Claims priority, application Japan, Mar. 29, 1972, 47-31436
Int. Cl. G04b 47/00
U.S. Cl. 58—152 H 6 Claims

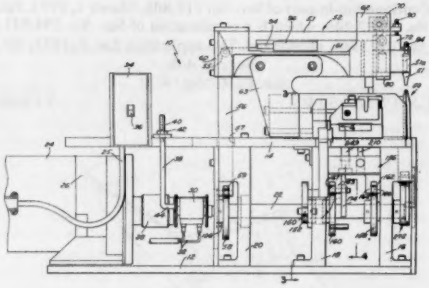


1. An in-operation indicating device for a clock comprising a disk member periodically moved by a clock device, a power source battery for driving said clock device, a switch device positioned adjacent to said disk member and operatively coupled thereto for effecting periodically its switching action by the rotation of said disk member, a light-emitting diode connected to said power source battery through said switch device, and a capacitor connected in parallel to a series circuit of said switch device and light-emitting diode and charged by said power source battery when said light-emitting diode is disconnected from said power source battery by said switch device and discharged to make said light-emitting diode emit light for an extremely short time at the moment when said switch device is closed.

3,841,088
APPARATUS FOR FORMING WIRE LINKS

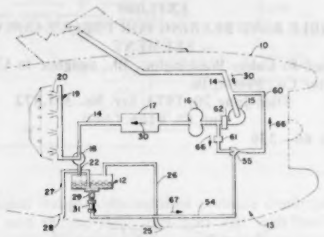
Thomas J. Crafford, East Providence, R.I., and John W. Crafford, Rehoboth, Mass., assignors to Crafford Tool & Die Co., Riverside, R.I.

Filed Jan. 24, 1973, Ser. No. 326,411
Int. Cl. B21l 1/4
U.S. Cl. 59—16 28 Claims



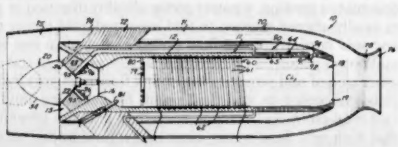
1. Apparatus for forming a wire link and/or linking the wire link to a preformed chain, comprising a base, a carrier mounted for reciprocating vertical movement on said base, a magazine mounted on said base and forwardly of said carrier for receiving a plurality of wire elements formed in open-ended configuration wherein the open portion of each wire element faces upwardly, a lower die assembly located forwardly of said magazine and communicating therewith, said lower die assembly having a wire element receiving portion formed therein, and a lower die assembly vertically movable therein for engaging a wire element for moving it upwardly to a linking station, a head assembly located above said base and including a forming head die that is mountable for vertical movement for engagement by said wire element during a link forming operation, said forming head die cooperating with said lower die wherein a wire element is located therebetween during the link forming operation, means for successively feeding said wire elements through said magazine to said lower die assembly, means for periodically moving said forming head die downwardly for engagement with a wire element, means operating in timed relation with respect to said feeding means and said forming head die for lifting said lower die member upwardly to move a wire element into engagement with said forming head die thereby forming a link, and means associated with said lifting means for adjusting the space between said forming head die and said lower die member to compensate for different size wire elements for forming links of varying sizes.

3,841,089
FUEL RECLAIMING SYSTEM
Herbert Clark, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Feb. 20, 1973, Ser. No. 333,850
Int. Cl. F02c 9/12
U.S. Cl. 60—39.09 F 5 Claims



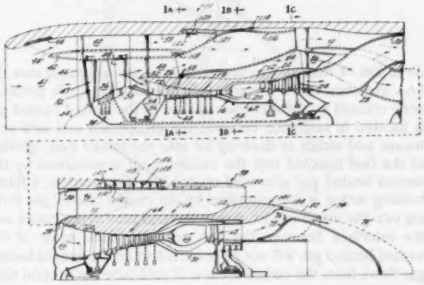
1. In a system for collecting and disposing of fuel remaining in a jet engine after shutdown wherein a dump tank, having inlet and outlet openings, is provided for collecting fuel remaining in portions of the engine and wherein a fuel pump, connected in series with the fuel line, is operative to supply fuel to the engine, a fuel reclaiming system, comprising:
a dual-function check valve having first and second orifices, the check valve, in use, being positioned externally of the dump tank, the first orifice communicating with the interior of the dump tank through the outlet opening of the tank, the check valve comprising means initially preventing passage of fuel or gasses from the dump tank and, alternatively upon the occurrence of a predetermined differential pressure across the check valve, allowing the drainage of substantially all fuel present in the dump tank, through the check valve from the first orifice through the second orifice, but preventing gaseous flow through the check valve from the first orifice and through the second orifice;
an ejector pump having a supply flow inlet, a motive flow inlet, and an outlet;
means providing communication between the ejector pump supply flow inlet and the second orifice of the dual-function check valve;
means providing communication between the ejector pump motive flow inlet in the fuel line at a location on the fuel line downstream of the fuel pump; and
means providing communication between the ejector pump outlet and the fuel line at a location on the fuel line upstream of the fuel pump.

3,841,090
JET ENGINE METHOD
Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841
Division of Ser. No. 191,627, Oct. 22, 1971, Pat. No. 3,750,400. This application June 4, 1973, Ser. No. 366,571
Int. Cl. F02k 1/14
U.S. Cl. 60—204 7 Claims



1. A method of operating an engine having a first stage including a converging-diverging inlet, a fuel injector movable from a first position to a second position, a combustion chamber, and a converging exhaust opening where the inlet is forward of the combustion chamber and air passing rearwardly through the inlet passes into the combustion chamber and the exhaust gases passing rearwardly from the combustion chamber pass through the exhaust opening comprising the steps of:
a. heating the air within the combustion chamber to a predetermined temperature; and,
b. injecting fuel into the combustion chamber alternatively from the first position rearwardly and axially through the inlet into the combustion chamber to cause air to be induced through the inlet into the combustion chamber due to the jet pumping action of the injected fuel, and from the second position rearwardly of the inlet.

3,841,091
MULTI-MISSION TANDEM PROPULSION SYSTEM
Donald Farley Sargisson, Cincinnati, and Dan Joseph Rundell, Milford, both of Ohio, assignors to General Electric, Lynn, Mass.
Filed May 21, 1973, Ser. No. 362,485
Int. Cl. F02k 3/12
U.S. Cl. 60—224 12 Claims

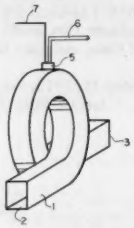


1. A tandem variable cycle propulsion system comprising: a forward turbofan engine having a fan, gas generator, and fan turbine arranged in axially spaced serial flow relation;
a coaxially displaced downstream turbojet engine having a compressor, combustor and turbine arranged in axially spaced serial flow relation;
outer exhaust duct means for directing the exhaust stream from the turbofan engine rearward around the turbojet engine; and
variable cross-over valve means which may assume a first subsonic mode whereby the flow exiting from the fan and bypassed around the gas generator is directed to the outer exhaust duct means while an inlet ambient airflow is directed to the inlet of the turbojet and a seocnd transonic and supersonic mode whereby the flow exiting from the fan and bypassed around the gas generator is directed to the turbojet inlet.

3,841,092
REGENERATIVE RAM JET ENGINE
"W" "B" Driver, 19 Sheridan Rd., Arnold, Md. 21012
Filed Feb. 27, 1973, Ser. No. 336,233
Int. Cl. F02k 7/10
U.S. Cl. 60—269 1 Claim

1. A regenerative ram jet engine comprising a tube coiled so that one side of said tube will interface with the side opposite of said side, the two said sides attached where the two said sides interface, diagonal vent means through the two said sides where the two said sides are attached, the intake end of the

said tube faces in the direction the said engine will move, the exhaust end of said tube faces in the direction opposite the direction the intake end faces, Combustion means and fuel injection means in the coiled section of said tube, incoming air flows into said tube through the intake end, fuel is injected into and burned with the incoming air in the coiled section of said tube, heated gas generated by the burning of fuel with the incoming air flows from the coiled section of said tube out the exhaust end of said tube, thrust is provided to said engine by the heated gas flowing out the exhaust end of said tube, the heated gas flowing along the inside wall of said tube where the vent is located is vented through the diagonal vent means into the incoming air before fuel is injected into the incoming air, preheating of the incoming air is accomplished by the vented heated gas before fuel is injected into the incoming air, the



direction of flow of the vented heated gas approximates the flow direction of the incoming air in said tube, a low pressure zone created by the direction of flow of the vented heated gas is located in said tube between the intake end and said vent means and assists in drawing air into the intake end, ignition of the fuel injected into the incoming air is sustained by the vented heated gas after said engine has been started, a flame holding action is accomplished by the vented heated gas flowing into the incoming air, due to the said tube being coiled and the interface between the two opposite sides, most of the vented heated gas will not be revented when the vented heated gas flows from the coiled section of said tube the second time because most of the vented heated gas will flow along the inside wall of said tube opposite the inside wall of said tube where the vent is located and discharge through the exhaust end.

3,841,093

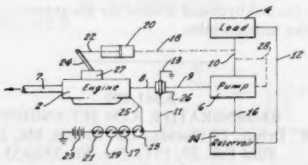
NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, Dearborn Heights, Mich., assignor to Sargeant Industries Inc., Los Angeles, Calif.

Division of Ser. No. 274,798, July 24, 1972. This application Sept. 27, 1973, Ser. No. 401,199

Int. Cl. F16h *39/50*

U.S. Cl. 60—327 **11 Claims**



1. A method of reducing noise, including the following steps:

providing for the operation of an auxiliary mechanism on a vehicle where the mechanism provides an operation different from propulsion of the vehicle,

regulating the speed of an engine in the vehicle at speeds near its idling speed during the operation of the auxiliary mechanism,

using the power from the engine at speeds near its idling speed to supply a fluid under pressure for operating the auxiliary mechanism, and

introducing the fluid under pressure to the auxiliary mechanism to operate the auxiliary mechanism.

3,841,094

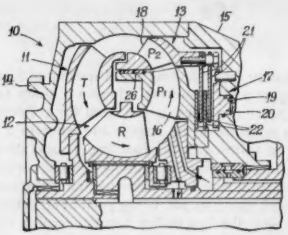
FLEXIBLE BAND BEARING FOR TORQUE CONVERTER ELEMENT

Raymond P. Cobb, Washington, Ill., assignor to Caterpiller Tractor Co., Peoria, Ill.

Filed June 20, 1973, Ser. No. 371,572

Int. Cl. F16h *33/00*

U.S. Cl. 60—339 **3 Claims**



1. A bearing assembly comprising

inner and outer members mounted together for relative rotation,

an annular outer seating surface, defined by a first diameter, formed on said inner member,

an annular inner bearing surface formed on said outer member to define an annular gap between said seating and bearing surfaces, and

a stretchable endless band, composed of a plastic bearing material and normally having an inner second diameter slightly smaller than said first diameter when said endless band is in its relaxed condition, stretched over and firmly contracted onto the annular seating surface of said inner member to have outer surface portions thereof disposed in close bearing relationship with respect to the inner bearing surface of said outer member,

said inner and outer members being rotatably mounted in a torque converter.

3,841,095

MOTOR VEHICLE FLUID POWER CIRCUIT

James P. Baker, Parma Heights, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

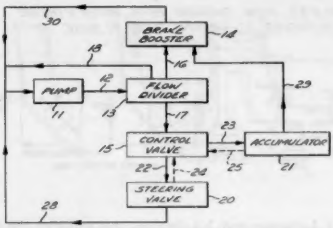
Filed Apr. 26, 1973, Ser. No. 354,710

Int. Cl. F15b *11/16, 1/02*

U.S. Cl. 60—404 **25 Claims**

1. A motor vehicle fluid power circuit having a fluid pump, an accumulator, and a brake booster; said brake booster comprising an input rod movable toward and away from a deactuated position, a power piston slidably disposed in a bore in axially aligned relation to said input rod, said power piston and said bore defining a fluid power chamber on one side of said power piston adjacent said input rod, an output rod on the other side of said power piston, a first fluid inlet port hydraulically connected to said fluid pump for receiving fluid from said fluid pump and being in open fluid pressure communication with said fluid power chamber, a fluid outlet port, first valve means movable by said input rod for opening and at least partially closing fluid pressure communication between said first inlet port and said outlet port through said fluid power

chamber, said first valve means being open when said input rod is in said deactuated position, a second fluid inlet port hydraulically connected to said accumulator for receiving fluid from said accumulator, and second valve means actuated



by said input rod for opening fluid pressure communication between said second fluid inlet port and said fluid power chamber only when said first valve means is completely closed.

3,841,096

CONTROL AND REGULATOR DEVICE FOR A LOAD-INDEPENDENT REGULATED HYDRAULIC SYSTEM

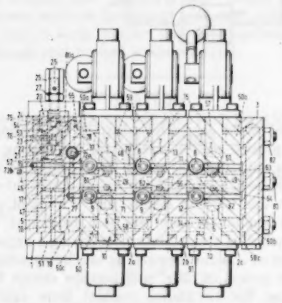
Dirk Jan Koppen, Scheveningseweg 102 A, The Hague, and Hendrik Theodoor Metz, Jonkerlaan 17, Appingedam, both of Netherlands

Continuation-in-part of Ser. No. 267,206, June 28, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,897

Claims priority, application Netherlands, June 29, 1971, 7108960

Int. Cl. F15b *11/16*

U.S. Cl. 60—462 **27 Claims**



1. In a hydraulic device for the control and load-independent regulation of hydraulic consumers of a hydraulic medium, said device comprising:

A. two consumer ports;

B. a pump channel and a return channel connected to said consumer ports;

C. a control spool valve through which each said consumer port can be selectively connected with said pump channel or said return channel;

D. a pressure-regulating valve unit, for maintaining a constant pressure difference between said pump channel and said consumer ports connected thereto, comprising a pressure-regulating spool valve forming a regulating throttle orifice between said pump channel and said return channel as a result of:

1. pump pressure acting on one end of said pressure-regulating spool valve and

2. the sum of consumer pressure, propagated from said consumer ports through pilot bores, plus a regulating valve spring acting on the other end of said spool valve; and

E. supply and discharge means for said hydraulic medium towards and away from said spool valve,

the improvement comprising a pressure-influencing valve cartridge which interrupts at least one of said pilot bores.

3,841,097

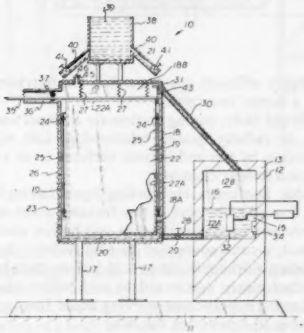
DIFFERENTIAL TEMPERATURE FLUID MOTOR

Israel Siegel, 351 W. 71st St., New York, N.Y. 10023

Filed Feb. 22, 1973, Ser. No. 334,974

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **20 Claims**



1. A differential temperature fluid motor comprising a warm chamber, adapted to keep fluid at relatively warm temperature,

a cold chamber adapted for obtaining a mechanical advantage from small bodies of rising fluid,

said cold chamber comprising a container member and a body member disposed within said container member to thereby provide a volumetric space between said body and container,

said volumetric space comprising relatively small volume, relative to the body,

means for permitting movement of one of said members thereof in response to a buoyant force,

means for temporary restraining of movement of said moving member until activating fluid has risen to a predetermined level between container and body,

force transmitting means operatively associated with said movable member for translating said movement into useful work,

a supply of activating fluid in said warm chamber and cold chamber having liquid levels partitioning said warm and cold chambers into a vapor chamber portion and a liquid chamber portion,

a liquid conducting conduit interconnecting the liquid portions of warm and cold chambers,

a vapor conducting conduit interconnecting the vapor portions of warm and cold chambers,

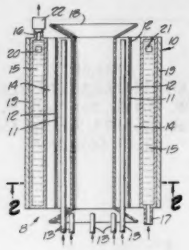
means for cyclic opening and closing said vapor conducting conduit to effect differences in vapor pressure between warm chamber and cold chamber,

and means for obtaining a temperature differential between warm chamber and cold chamber.

3,841,098
HIGH EFFICIENCY POLLUTANT-FREE COMBUSTION GAS GENERATOR

Milan Novakovich, 215 Apolena Ave., Balboa Island, Calif. 92662

Filed Jan. 19, 1973, Ser. No. 325,171
Int. Cl. F01k 25/00
U.S. Cl. 60—647 28 Claims



1. A highly efficient gas generator for providing motive power to a motor, comprising

a cylindrical body, having concentric external and internal walls in radially spaced relationship, said walls being connected by top and bottom surfaces so as to form an enclosed hollow chamber;

a heatable, nonflammable working liquid having low latent heat, low specific heat, a low freezing point and a high molecular weight contained in said hollow chamber;

inlet duck means connected to said hollow chamber for providing working liquid to said hollow chamber;

outlet duct means connected to said hollow chamber for conducting superheated working liquid from said hollow chamber to a motor or the like;

a cylindrical mesh concentrically positioned radially inwardly of said body walls and laterally spaced therefrom; a catalytic compound for producing a flameless radiant heat dispersed on said mesh over substantially the surface thereof which faces the internal wall of said hollow body so as to superheat the working liquid and maintaining the same in liquid form;

conduit means positioned adjacent said catalytic compound for conducting combustable fuel to the surface of said catalytic compound;

pressure sensor means connected to said hollow chamber for maintaining a constant pressure therein;

temperature sensor means connected to said hollow chamber for maintaining a constant temperature of said working liquid therein; and

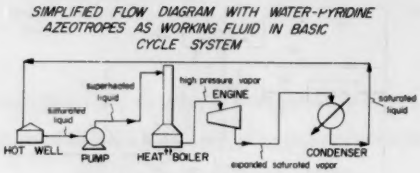
insulation means surrounding the exterior surface of the most laterally positioned external wall of said hollow chamber for preserving the heat within said hollow chamber.

3,841,099
WORKING FLUIDS FOR EXTERNAL COMBUSTION ENGINES

George S. Somekh, New Rochelle, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 100,699, Dec. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 862,526, Sept. 30, 1969, abandoned. This application Oct. 17, 1973, Ser. No. 407,144
Int. Cl. F01k 25/06
U.S. Cl. 60—671 11 Claims

1. Method of converting heat energy to mechanical energy which comprises heating an aqueous nitrogen-containing hydrocarbon working fluid, to the vapor state, said working fluid containing about 25 to 90 percent by weight of a monocyclic nitrogen-containing hydrocarbon selected from the group consisting of pyridine, 2-methyl pyridine, 3-methyl pyridine, 4-methyl pyridine, 2,6-dimethyl pyridine, 1,2-

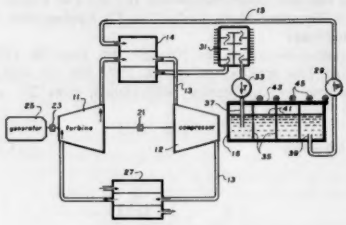


diazine, 1,3-diazine and 1,4-diazine, and utilizing the energy of the vaporized working fluid to perform work.

3,841,100
CLOSED CYCLE GAS TURBINE SYSTEM

Peter Fortescue, La Jolla, and Corwin L. Rickard, Rancho Santa Fe, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Oct. 5, 1972, Ser. No. 295,300
Int. Cl. F01k 25/00
U.S. Cl. 60—690 11 Claims



1. A closed cycle gas turbine system comprising, turbine means, compressor means, means for circulating a gas for expansion in said turbine means and compression in said compressor means, a heat exchanger for cooling the gas after expansion in said turbine means, and a coolant circuit for circulating a coolant through said heat exchanger, said coolant circuit including a delay reservoir having a capacity equal to the amount of coolant required by said heat exchanger over a substantial period of time, said coolant circuit further including means for circulating coolant from said heat exchanger into said reservoir and from said reservoir to said heat exchanger.

3,841,101
GUTTER COUPLINGS

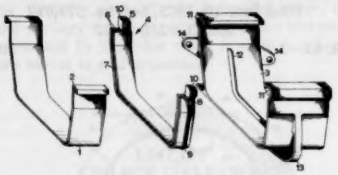
Basil Henfrey, Kloof, South Africa, assignor to Duropenta Holdings (Proprietary) Limited

Filed June 18, 1973, Ser. No. 370,606
Claims priority, application South Africa, July 3, 1972, 72/4540
Int. Cl. E02b 9/04; E04d 13/06
U.S. Cl. 61—14 9 Claims

1. A gutter coupling assembly comprising:

a support member; two lengths of channel-shaped plastic guttering having ends thereof extending into said support member from opposite sides of said support member, said ends being cradled by said support member which conforms to the general cross-sectional shape of said guttering;

two stiffening members, each generally conforming to the cross-sectional shape of said guttering lengths and each secured to one of said length ends; and



means on each stiffening member for thus securing the stiffening members, said means being such that said ends are stiffened when the stiffening members are secured thereto.

3,841,102

METHOD OF IMPROVING THE QUALITY OF LEACHATE FROM SANITARY LANDFILLS

Jesse R. Cinner, and Ronald J. Polosky, Pittsburgh, Pa., assignors to Environmental Sciences, Inc., Pittsburgh, Pa.

Filed Jan. 2, 1974, Ser. No. 429,972
Int. Cl. C02c *5/02, 5/06*
U.S. Cl. 61—35 **10 Claims**

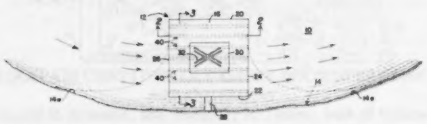
1. The method of improving the quality of leachate from sanitary landfill material, comprising treating waste material by mixing with it an aqueous solution of an alkali metal silicate and a silicate setting agent containing polyvalent metal ions to cause said silicate and setting agent to chemically react with each other and convert the mixture into a consolidated chemically and physically stable earth-like material substantially insoluble in water and with its pollutants entrapped in the solidified silicate, and disposing said landfill material and treated waste material in contact with each other on land to be filled and in such relation that said leachate will trickle down through said treated waste material.

3,841,103

CURRENT STABILIZING MEANS FOR ISLAND AIRPORT FOUNDATIONS

John W. Magill, Chicago, Ill.

Filed Sept. 11, 1972, Ser. No. 287,906
Int. Cl. E02b *1/00*
U.S. Cl. 61—46 **3 Claims**



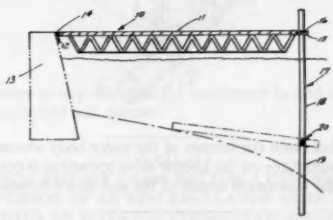
1. In an island airport which projects outwardly from the shore line of a large body of flowing water and is positioned in a direction transversely of the normal direction of flow of water along the shore line, an airport foundation embodying a foundation fill which is bounded by structural piling reinforced by riprap, a narrow causeway connecting said foundation to the shore line, a plurality of prestressed cast concrete conduits projecting completely through said foundation, disposed in spaced apart parallel relationship and extending parallel to said shore line and generally in the direction of water flow in the body of water, and a plurality of prestressed cast concrete conduits projecting transversely through said causeway, all of said conduits being disposed in the vicinity of the level of water in said body and their number and size being such that they materially inhibit water flow obstruction by the airport and causeway and maintain water borne sediment flow along the shore line past and through the airport and causeway, and power-actuated means for assisting the flow of water through the first mentioned conduits and in the normal direction of water flow.

3,841,104

REMOVABLE DOCK

Billy K. Hufford, R.R. 1, Ansonia, Ohio 45303

Filed Sept. 10, 1973, Ser. No. 395,428
Int. Cl. E02b *3/22*
U.S. Cl. 61—48 **3 Claims**



1. A removable boat dock comprising

an elongated gangplank adapted for on-shore storage when disassembled and adapted when assembled to extend between an on-shore support disposed adjacent the shoreline of a body of water and a boat afloat therein, said gangplank

having at the shore end thereof means readily detachablyconnecting said end to said support when said dock is assembled,

a plurality of support posts each having an upper end readily detachably-connected to szid gangplank at locations spaced apart from said shore-end connecting means when said dock is assembled and extending downwardly through said water with the lower ends of individual posts secured to the bottom formation of said body of water,

each of said posts having upper and lower post portions pivotally connected together below the surface of the water at a location between the upper and lower ends of individual posts for relative rotational movement of said post portions, and

means readily detachably-connecting and releasably maintaining said upper and lower post portions in rectilinear relation relative to one another when said dock is assembled and permitting said relative rotational movement and submerged in-water storage of said posts when said dock is disassembled.

3,841,105

METHOD AND APPARATUS FOR ANCHORING UNDERWATER PIPELINES

Glyn E. Cannon, P.O. Box 55263, Houston, Tex. 77055

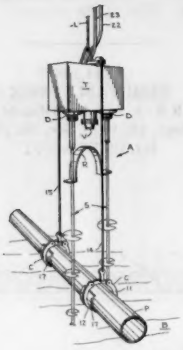
Filed Apr. 9, 1973, Ser. No. 349,272
Int. Cl. F16l *1/00;* **E02d** *5/80*
U.S. Cl. 61—72.3 **7 Claims**

1. A method of anchoring a submarine pipeline beneath a body of water comprising the steps of:

a. lowering an anchor drive apparatus from a supporting vessel at the surface to a position above the pipeline;

b. connecting a pull-down means from the anchor drive apparatus to the pipeline; and

c. urging the anchor drive apparatus downwardly by the pull down means while simultaneously driving the



anchors into the bottom of the water body whereby any upward force on the anchor drive apparatus is countered by the downward urging of the pull down means.

3,841,106

PIPELINE ANCHORING SYSTEMS

Randolph Blumberg, 5533 Redstart, Houston, Tex. 77035

Filed Apr. 18, 1973, Ser. No. 352,357

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **13 Claims**

1. A system for anchoring an underwater pipeline at intervals along its length where the pipeline extends along a floor under a body of water, comprising:

anchoring sled means which are submergible in water, said sled means being constructed and arranged to straddle an underwater pipeline,

surface boat means adaptable for vertical alignment with respect to said submergible anchoring sled means;

pulley anchor means for location along the pipeline at a relatively great distance from said boat means, pulley means coupled to said pulley anchor means;

cable means extending from said boat means, over said pulley means and coupled to said anchoring sled means for selectively moving said anchoring sled means along a pipeline from one position to another position;

vertically disposed cable guide means extending between said boat means and said anchoring sled means;

anchor means having an inverted U-shaped configuration; anchor placement means slidably coupled to said cable guide means for lowering an anchor means from said boat to said anchoring sled means, said anchor placement means including means for releasably coupling said placement means to said anchor means.

3,841,107

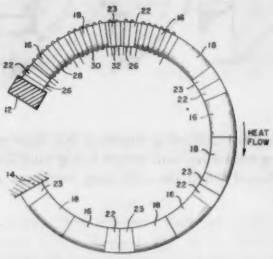
MAGNETIC REFRIGERATION

Arthur C. Clark, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 20, 1973, Ser. No. 371,917

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **20 Claims**



1. A magnetic refrigeration system comprising:

a first magnetocaloric thermal conductor;

a second thermal conductor serially connected to said first thermal conductor;

a source of magnetic field, said field movable along said first and said second thermal conductors to induce a thermal flow in said conductors; and

thermal switching means adapted to regulate the thermal flow through said conductors.

3,841,108

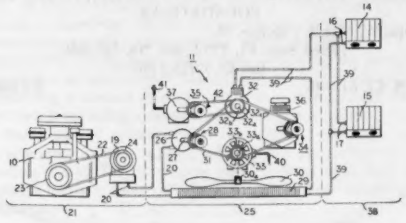
POWER-REFRIGERATION APPARATUS FOR RECREATIONAL VEHICLES AND THE LIKE

Michel A. Pierrat, Andover, Mass., assignor to Automatic Radio Mfg. Co., Inc., Melrose, Mass.

Filed Dec. 17, 1973, Ser. No. 425,691

Int. Cl. F25b *27/00*

U.S. Cl. 62—236 **14 Claims**



1. Apparatus for powering accessory equipment aboard a vehicle having a main propulsion engine, comprising rotary hydraulic pumping means driven by said engine at the site thereof, a rotary hydraulic motor having an output shaft, means for supplying hydraulic fluid from said pumping means to said hydraulic motor and rotating said shaft, an electric motor having an output shaft rotatable when said motor is energized from an outside source, an auxiliary internal-combustion engine having a rotatable output shaft, accessory-powering means including an electrical generator having a rotatable input shaft and producing electrical power for accessory equipment when said shaft thereof is rotated, a plurality of normally-disengaged mechanical clutches each having a first clutch portion which, when rotated, extends radially into driving engagement with a second cooperating driven clutch

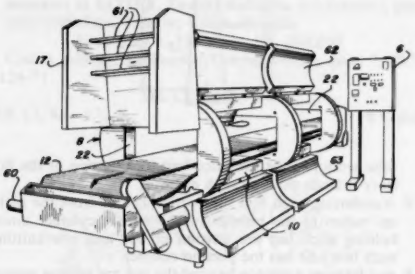
portion, means connecting the said first clutch portions for rotation with the output shafts of said hydraulic motor, electric motor and auxiliary engine, respectively, and means mechanically connecting said second clutch portions in rotary motion-transmitting relationship with said input shaft of said generator, whereby each of said hydraulic motor, electric motor and auxiliary engine automatically drives said generator without restraint by the other when brought into operation as a prime mover in said apparatus.

3,841,109

CHILLER APPARATUS

Lyle L. Cann, Peotone, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 331,124
Int. Cl. F25d *23/02*
U.S. Cl. 62—266 **9 Claims**



1. An apparatus for fast freezing with a cold gas comprising: a longitudinal housing having passages at the ends thereof, the interior of said housing having continuous concave side walls a top panel, and a bottom channel joining said side walls; conveyor means for moving products to be frozen through said housing interior via said passages; means for supplying a cold gas into said housing interior; and means for directing the cold gas upon the products and toward said bottom channel, said last mentioned means dividing the gas into substantially two currents, each current moving upwardly 0004 1a side wall toward said top panel for repeated application to the products to freeze same.

3,841,110

ROOM AIR CONDITIONER DAMPER DOOR OPERATING ARRANGEMENT

Donald R. Schuster, and Theodore E. Tinsler, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

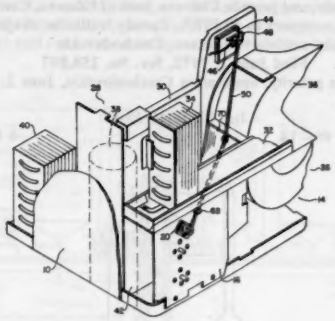
Filed Dec. 21, 1973, Ser. No. 427,280
Int. Cl. F25d *17/06*
U.S. Cl. 62—427 **6 Claims**

1. In a self-contained room air conditioner having a room-side section separated by a bulkhead from an outside-side section, and provided with an operable damper for controlling the exchange of air between said sections through an opening in said bulkhead adapted to be closed by said damper:

means defining a control knob area at a face of said room-side section;

manually operable damper control operating means located at said control knob area; and

means connecting said damper control operating means with said damper, said connecting means comprising a one-piece polyester film strip having integrally formed



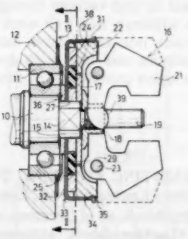
means at opposite ends for attachment to said operating means and said damper.

3,841,111

ELASTIC ROTARY COUPLING FOR A CENTRIFUGAL GOVERNOR OF AN RPM REGULATOR ASSOCIATED WITH AN INTERNAL COMBUSTION ENGINE

Heinrich Staudt, Markgroningen; Eberhard Hofmann, Kirchberg Murr, and Ilija Djordjevic, Stuttgart-Vaihingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany, by said Staudt and Hofmann

Filed Jan. 31, 1973, Ser. No. 328,415
Claims priority, application Germany, Mar. 21, 1972, 2213698
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 NM **4 Claims**



1. In an elastic rotary coupling between a drive shaft and a centrifugal weight carrier of a centrifugal governor, said elastic rotary coupling being of the type that has (a) a primary or driving part affixed to said drive shaft, (b) a secondary or driven part including said centrifugal weight carrier, (c) a cage formed jointly by said driving and said driven parts, (d) elastic coupling elements disposed in said cage symmetrically with respect to said drive shaft, said elastic coupling elements transmitting the torque from said primary part to said secondary part, the improvement comprising a bowl-shaped housing forming part of said primary part and being secured to said drive shaft, said centrifugal weight carrier being received in said bowl-shaped housing, said bowl-shaped housing having a wall portion including an inner cylindrical running face, said inner cylindrical running face constituting an external bearing for said centrifugal weight carrier.

3,841,112

APPARATUS FOR HOLDING AND REMOVING A KNITWORK IN A DOUBLE CYLINDER CIRCULAR KNITTING MACHINE

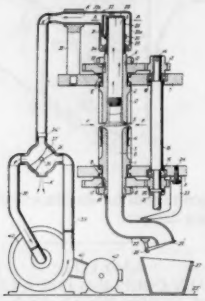
Pavel Uhlir, and Jarmila Uhlirova, both of Eliasova, Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed June 1, 1972, Ser. No. 258,897

Claims priority, application Czechoslovakia, June 2, 1971, 4036-71

Int. Cl. D04b *15/88*

U.S. Cl. 66—14 6 Claims



1. A circular knitting machine comprising an upper and lower needle cylinder aligned along a common axis and spaced from each other to form a knock-over plane therebetween, said cylinders defining a central bore in which a knit work is formed during the knitting operation, a porous basket comprising a cylindrical vessel having an opening coaxial with said bore at one end and closed at its other end, said vessel being secured at its open end to the upper end of said upper cylinder for conjoint rotation therewith, an air tight housing surrounding said basket forming a plenum thereabout, a source of air under pressure and vacuum and means for selectively circulating said air and vacuum through said bore, basket and plenum to withdraw said knit work upwardly above said knock-over plane into said basket during the knitting operation and to remove said knit work downwardly out of said lower cylinder upon completion of said knitting operation.

3,841,113

METHOD OF KNITTING STOCKING TOE CLOSURE

Heinze Lucke, Rheine; Konrad Schredl, Lenting U/Ingolstadt, and Peter Boy, Ingolstadt, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

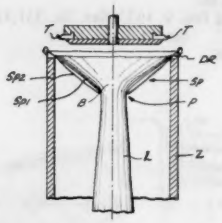
Continuation of Ser. No. 137,236, April 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 769,459, May 15, 1968, abandoned. This application May 14, 1973, Ser. No. 360,111

Int. Cl. D04b *9/56, 15/02*

U.S. Cl. 66—95 13 Claims

1. The method of making hosiery, which comprises completing knitting of the hosiery by knitting in sequence the welt, body, heel, foot and toe portions of the hosiery, which toe portion includes a finished toe, effectively closable without further knitting, sewing or securing, on a circular knitting machine having dial-carried pick-up means arranged to cooperate with a circle of needles in a needle cylinder including,

1. following completing of knitting of the welt portion, body portion, heel portion and foot portion, knitting a first toe portion course on the entire circumference of the needle cylinder and picking up such course by the dial-carried pick-up means;
2. continuing the formation of the hosiery toe portion by knitting a circular folded toe tube section following such first toe portion course, encircling the foot portion and including an earlier knit portion at one side of the fold, a later knit portion at the other side of the fold and a last toe portion course at the margin of the later knit portion remote from the fold, such folded toe tube section having a passage inwardly of the fold thereof through which the foot portion of the hosiery extends;
3. while such last toe portion course is carried by the needles of the needle cylinder circle and the fold of the folded toe tube encircles the foot portion, rotating such first and last toe portion courses relatively through an angle of at least 180° and thereby constricting without closing the passage inwardly of the fold of the folded toe



tube section while the prior knit foot portion of the hosiery extends through such passage;

4. transferring such first toe portion course from the pick-up means to the needles of the needle cylinder circle holding such last toe portion course and interknitting such first and last toe portion courses;
5. and forming a selvage beyond the last toe portion course by knitting at least one additional course;

following completing of the knitting of the hosiery, removing the hosiery from the knitting machine, and pulling the foot portion of the hosiery through the passage inwardly of the fold of the folded toe tube section to remove the foot portion of the stocking from such passage, simultaneously inverting the folded toe tube section and effectively closing the passage inwardly of the fold of the folded toe tube section.

3,841,114

PROCESS AND DEVICE FOR DOUBLING ON A DOUBLE NEEDLE BED, RIB END KNITTING MACHINE

Marcel A. Vandermeirsch, Victor, Braeckmanlaan, Belgium, assignor to Fabrique National Herstal S.A. en abrege EN, Herstal-lez-Liege, Belgium

Filed May 21, 1973, Ser. No. 362,229

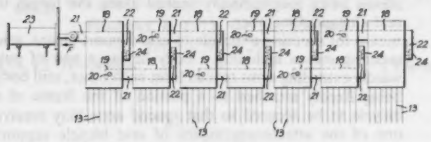
Claims priority, application Belgium, June 29, 1972, 785562

Int. Cl. D04b *9/40*

U.S. Cl. 66—148 4 Claims

1. A process for making rib ends on a double needle bed rib and knitting machine and transferring the rib ends onto a magazine reed having a smaller width than said rib ends as knit by means of a variable width transfer reed, comprising knitting a rib end on selected needle bed needles, simulatneously transferring groups of loops of one needle bed onto the free needles of the other needle bed; racking said one needle bed in relation to said other needle bed at least one needle spacing; transferring the remaining loops from said one needle bed onto the already laden needles of said other needle bed to thereby make varied loops in said groups of loops; simultaneously picking up all the loops from said one needle bed in a manner known per se by said transfer reed; bringing closer together on said transfer reed the said groups of loops thus

picked up until a distance of one needle spacing exists between any two varied loops; and transferring all the loops thus



picked up and brought closer together onto the said magazine reed from said transfer reed in a manner known per se.

3,841,115

METHOD OF KNITTING AN ANTI-LADDER STITCH COURSE

Bohumil Kejnovsky; Jan Fikrle, both of Trebic, and Antonin Hobza, Rokytnice nad Rokytnou, all of Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed June 1, 1972, Ser. No. 258,895

Claims priority, application Czechoslovakia, June 7, 1971, 4124-71

Int. Cl. D04b *9/48*

U.S. Cl. 66—172 R **8 Claims**

1. The method of knitting anti-run loop courses in multifeed circular knitting machines comprising the steps of dividing the needles one by one into two groups, forming loops of at least a single first yarn on the needles of one group, holding said first yarn on auxiliary knitting instruments in the space above the needles of the other group, the needles of the other group being withdrawn below said knitting instruments, forming loops of at least a single second yarn on at least the needles of the other group while maintaining said first yarn on said auxiliary knitting instrument, said second yarn at least crossing the loops formed on the needles of said one group, and thereafter knocking over the loops of each group, said first yarn held on said auxiliary knitting instrument being withdrawn through the loops formed on the needles of said second group prior to knock over.

3,841,116

MULTIPLE AUTOMATIC WASHER SYSTEM

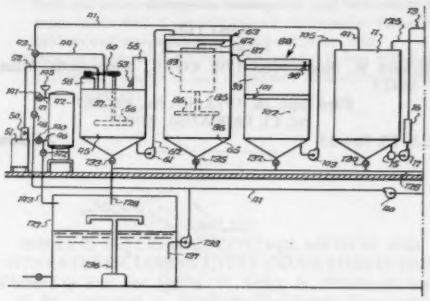
Lawrence N. Klein, Angola, N.Y., and William R. Wallens, Pembroke Pine, Fla., assignors to Century-Niagara Corporation, Raleigh, N.C.

Filed Dec. 8, 1972, Ser. No. 313,598

Int. Cl. D06f *31/00, 39/10*

U.S. Cl. 68—12 R **22 Claims**

1. In combination, a plurality of automatic washing machines, each of said machines having independent time control means for executing wash and rinse cycles each including introduction of water to the machine and discharge of water therefrom; a wash water storage tank and a rinse water storage tank each serving the several machines in common; a wash water sump and a rinse water sump; an outlet in each machine having drain conduits leading to said sumps, respectively; means in said outlet connected for operation by said time control means for directing wash water and rinse water through said conduits to the respective sumps; conduit means including pump means for delivering water from said sumps to said storage tanks, respectively; rinse water treating means in said conduit means including means for filtering and removing detergent from said rinse water prior to returning said rinse water to said rinse water storage tank; and wash water treating



means in communication with said wash water conduit means including means for chemically treating, precipitating solids and sludge and removing the precipitated solids and sludge from and filtering said wash water prior to returning the same to said wash water storage tank whereby said rinse and wash water are maintained separate from each other and suitable for total recirculation for separate use in wash and rinse cycles.

3,841,117

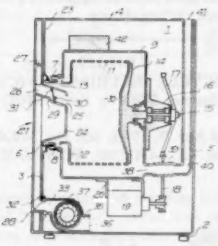
FRONT LOADING WASHING AND DRYING MACHINE

Jose Maria Roger Crivilles, Calle Escuelas Pias, 9, Barcelona, Spain

Filed Jan. 26, 1973, Ser. No. 326,896

Int. Cl. D06f *39/14*; **F26b** *11/04, 25/12*

U.S. Cl. 68—20 **1 Claim**



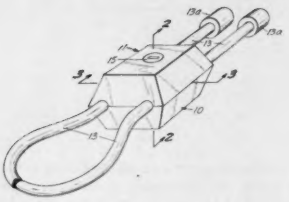
1. Front-loading washing and drying machine having a body with a front, a perforated drum for containing the wash, a tub within the body, the drum being rotatable within the tub, a loading window for the drum at the front of the body, a closure member, the closure member being movable between positions to close the window or open it for loading, an aperture in the closure member registrable with the drum, and duct means in the closure member for leading drying air to the aperture, an orifice formed in a rear face of the closure member, the said duct establishing communication between the aperture for inflow of drying air into the drum and the orifice, means for impelling and heating air, mounted to the body of the machine, an outflow aperture for air from said impelling and heating being means registrable with the said orifice, and

means to seal the orifice to the aperture when the closure member is in its window-closing position, the aperture for the inflow of drying air within the drum having means for preventing flow-back of liquids into the duct, the said means for preventing flow-back of liquids into the duct being a section of the duct formed as an inverted syphon, the highest level of which is located above the level attained by washing liquid in the tub.

3,841,118
CABLE LOCK

Richard W. Stone, 7235 17th Ave. S., Minneapolis, Minn. 55423

Filed Sept. 28, 1973, Ser. No. 401,567
Int. Cl. E05b *67/06, 73/00*
U.S. Cl. 70—33 **2 Claims**

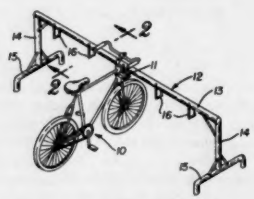


1. A locking device for snowmobiles, motorcycles, outboard motors and bicycles comprising
an elongated cable having stop knobs positively secured to the ends thereof,
a pair of mating block sections having cooperating grooves in opposed registration to receive and surround selected portions of said cable,
a locking member positively securing said two sections together to clamp the same around said cable,
said knobs prevent the cable ends from being removed from the locked together sections,
the dimensions of said two sections being sufficiently large to prevent the same from being received between the jaws of a lever type cutting device.

3,841,119
BICYCLE SECURING DEVICE

Edward A. Kaufmann, 2785 N. Speer Blvd., Denver, Colo. 80211

Filed Apr. 9, 1973, Ser. No. 349,489
Int. Cl. A47f *7/00;* **E05b** *73/00*
U.S. Cl. 70—58 **18 Claims**

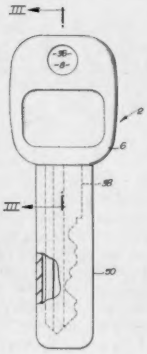


1. A bicycle securing device comprising
a. a bicycle support means having a single elongated member and a pair of upright support legs located at each end of said elongated member to hold said elongated member at a predetermined height above the ground,
b. said elongated member having a plurality of attaching means suspended downwardly therefrom, said attaching means being longitudinally spaced along the length of said elongated member,
c. means for securing a bicycle to said support means, said securing means including a body having a pair of outwardly extending arms spaced from each other, said body being fixedly attached to a portion of the frame of a bicycle to be secured so that spaced arms may receive one of the attachment means of said bicycle support means, and
d. locking means for releasably enclosing said attachment means within said spaced arms whereby said bicycle can be secured to said support means to prevent unauthorized removal.

3,841,120
MULTIPLE PART KEY FOR CONVENTIONAL LOCKS

Klaus W. Gartner, 5711 Ravenspur Dr., Palos Verdes Peninsula, Calif. 90274

Filed Mar. 28, 1973, Ser. No. 345,562
Int. Cl. E05b *19/04*
U.S. Cl. 70—395 **11 Claims**

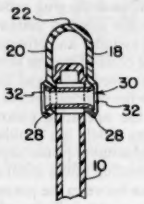


1. In a multiple part key having a separate shank and hilt, the shank including a first end which is suitably shaped for insertion into a lock and an opposite end for insertion into the hilt and having means thereon for engagement by cooperating means in the hilt, the improvement in hilt construction comprising the provision of:
a first hilt part for receiving said shank opposite end portion and including said cooperating means, the latter having resilient means for engaging said shank received therein, said resilient means of said first hilt part being normally in a non-engaging position relative to said shank opposite end received in said first hilt part before assembly of said hilt part; and
a second hilt part for assembly to said first hilt part and including means for holding said resilient means in a shank engaging portion upon assembly to said first hilt part, said second hilt part being provided with means for engaging and moving said resilient means into said shank engaging position upon assembly of said hilt parts, said shank being thereby retained in said hilt.

3,841,121
MEANS FOR ATTACHING A KEY TAG TO KEY RING OR CHAIN

Jack R. Shevin, 1227-1231 W. Loyola Ave., Chicago, Ill. 60626

Filed Oct. 4, 1972, Ser. No. 294,969
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R 1 Claim

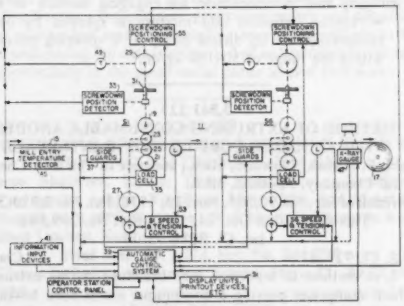


1. Means for attaching a key tag to a key ring or chain comprising, a separately formed single attaching strip of plastic material which is molded to a preformed U-shaped configuration in transverse section with spaced parallel sides connected by an arcuate-shaped end portion having spaced sides in the same plane as the spaced parallel sides, with a preformed opening adjacent each of the opposite free ends of the strip and with the openings alined, an annular embossed or raised surface surrounding each of said openings, said arcuateshaped end portion positioned around a key ring or chain to permit said key ring or chain to be freely manually rotated within said arcuateshaped end portion, said free ends of the strip being positioned on the opposite sides of a key tag with the openings alined with the key tag opening, and a fastening member extending through said openings and clinched at its opposite ends to engage said annular embossed surfaces but with the clinched ends inwardly of the outer plane of the embossed surfaces to prevent engagement with a contacting surface and for permanently fastening said strip to said key tag and joining said key tag to said key ring or chain.

3,841,122
ROLLING MILL GAUGE CONTROL METHOD AND APPARATUS INCLUDING FEEDBACK CORRECTION

Richard Q. Fox, Pittsburgh, and Donald J. Emberg, Vandergrift, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1972, Ser. No. 303,722
Int. Cl. B21b *37/00*
U.S. Cl. 72—6 8 Claims



1. A gauge control system for a rolling mill having at least a first roll stand followed by a second roll stand operative to reduce the gauge of a workpiece passed through said rolling mill, said system comprising:

means for determining a present first gauge error of the workpiece leaving said second roll stand,

means for determining a present second gauge error of the workpiece leaving said second roll stand in accordance with a predetermined relationship including said first gauge error,

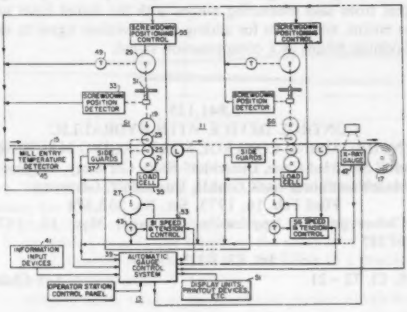
means for determining a correction for application to said first roll stand during the passage of said workpiece in accordance with a predetermined relationship including said second gauge error of said workpiece, and

means for controlling the roll opening of said first roll stand during the passage of said workpiece in accordance with said correction.

3,841,123
ROLLING MILL GAUGE CONTROL METHOD AND APPARATUS INCLUDING ENTRY GAUGE CORRECTION

Richard Q. Fox, and Andrew W. Smith, Jr., Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1972, Ser. No. 303,721
Int. Cl. B21b *37/02*
U.S. Cl. 72—8 9 Claims



1. A gauge control system for a rolling mill having at least a first roll stand followed by a second roll stand operative to reduce the gauge of a workpiece passed through said rolling mill, said system comprising:

means for determining the delivery gauge error of said workpiece leaving said second roll stand in accordance with a first predetermined relationship including the change in the screwdown position of said second roll stand and the change in the roll force of said second roll stand,

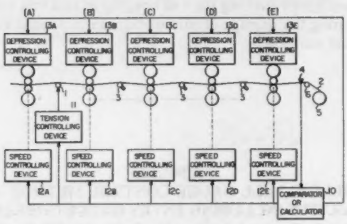
means for determining the required adjustment of said first roll stand for correcting said delivery gauge error in accordance with a second predetermined relationship including the mill spring modulus of said second roll stand and the workpiece plasticity in relation to said second roll stand, and

means for controlling the roll opening of said first roll stand during the passage of said workpiece in accordance with said required adjustment.

3,841,124
WIDTH CONTROLLING APPARATUS AND METHOD FOR ROLLED STRIPS

Shigeru Shida, Hitachi, and Sukebumi Tsumura, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 295,830
Claims priority, application Japan, Oct. 11, 1971, 46-79470; Oct. 11, 1971, 46-79471
Int. Cl. B21b *37/06*
U.S. Cl. 72—17 17 Claims

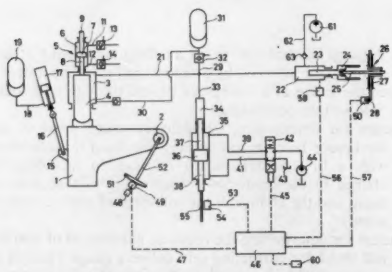


1. A width controlling apparatus for rolled strips, for use in a hot tandem rolling mill, comprising tensioning means for applying tension to a hot rolled strip passing between the forward rolling mill stands, looper means for maintaining the tension of the rolled strip substantially constant which is passing between the rearward rolling mill stands after its width has been controlled by said tensioning means, means for measuring the width of the rolled strip, first means for generating a signal representative of a predetermined strip width, second means for generating a deviation signal upon comparing a signal from said measuring means with the signal from said first means, and means for adding said deviation signal to said tensioning means as a compensation signal.

3,841,125
CONTROL DEVICE WITH HYDRAULIC SYNCHRONISING CONTROL FOR FORGING MACHINES

Rudolf Siegfried Guse, Dusseldorf-Rath, Germany, assignor to Maschinenfabrik Sack GmbH, Dusseldorf, Germany

Filed Feb. 16, 1973, Ser. No. 333,378
Claims priority, application Germany, Mar. 18, 1972, 2207717
Int. Cl. B21b *37/08*
U.S. Cl. 72—21 7 Claims

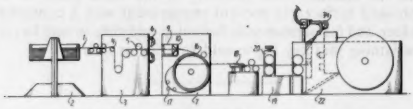


1. A control device with hydraulic synchronising control for a forging machine having a plurality of forging saddles which act upon a workpiece to reduce the cross section thereof by lateral pressure respective operating piston and cylinder devices associated with the forging saddles, each piston being subjected on the one hand to the effect of a substantially constant return force and on the other hand being connected to a respective pump cylinder, a driving arrangement for periodically reciprocating the pistons of the pump cylinders, a transmitter which measures the actual position of each forging saddle, an electrical controller for comparing the measured values with a nominal value, a controllable filling pump associated with each forging saddle and adapted to be controlled by the electrical controller to adjust the dead position of the operating cylinders so as to correspond to the farthest extension of each forging saddle, said filling pump being connected to the conduit system associated with the respective operating cylinder and effecting the variation of the filling capacity in the conduit system in response to a comparison between the measured value and the nominal value only when the pressure in the conduit system is approximately zero upon retraction of the operating piston, wherein the filling pump for each forging saddle is a double acting compensating cylinder having an adjustable piston separating two chambers and a piston rod extending into a control chamber connected to the connection line between the pressure side of the operating cylinder and the pump cylinder of the driving arrangement.

3,841,126
METHOD OF LUBRICATING A WORK, ESPECIALLY A WIRE IN A WARM FORGING PROCESS

Toshihiro Minami, and Akito Shiina, both of Kobe, Japan, assignors to Kobe Steel, Inc., Kobe, Japan

Filed Mar. 22, 1973, Ser. No. 343,705
Claims priority, application Japan, Mar. 22, 1972, 47-28807; Mar. 24, 1972, 47-29613
Int. Cl. B21j *3/00*
U.S. Cl. 72—45 4 Claims



1. A method of lubricating a workpiece, such as a wire in a warm forging process at a temperature between 450°–800°C, comprising the steps of:

preparing a mixture of oily lubricant and water, wherein said oily lubricant is mixed with 5–20 times as much water; and

spraying said mixture onto an engaging surface of said workpiece, wherein said mixture is sprayed by being compressed by an airless pump at a spraying pressure within the range of 50–150 kg/cm².

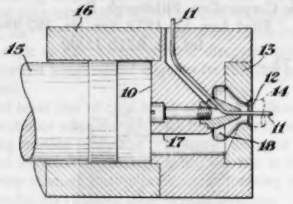
3,841,127
METHOD OF EXTRUDING CONSUMABLE ANODES WITH ANODIZED CORE-CLADDING INTERFACE

John F. Pashak, Linwood, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 92,305, Nov. 23, 1970, Pat. No. 3,723,282. This application Oct. 24, 1972, Ser. No. 299,881
Int. Cl. B21b *45/00*
U.S. Cl. 72—47 10 Claims

1. A method to minimize core breakage during extrusion which comprises passing a continuous metal core having a light metal surface through a die of larger cross section than the metal core and simultaneously extruding a light metal with the metal core whereby an overcoating of light metal is ap-

plied to the continuous metal core, the light metal surface of the metal core having been anodized to produce a synthetic



oxide layer thereon prior to its passing through the extrusion die, the light metals being aluminum alloys and magnesium alloys.

3,841,128

PRESS FOR HYDROSTATIC EXTRUSION OF TUBES

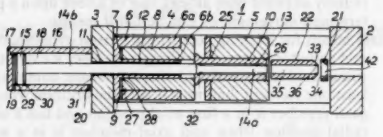
Jan Nilsson, Robertsfors, Sweden, assignor to Allamanna Svenska Electriska Aktiebolaget, Vasteras, Sweden

Filed June 5, 1973, Ser. No. 367,106

Claims priority, application Sweden, June 12, 1972, 7688/72

Int. Cl. B21c *25/04*

U.S. Cl. 72—60 **3 Claims**



1. Press for hydrostatic extrusion of tubes, comprising a press stand, a pressure chamber constituted by a high-pressure cylinder axially displaceable in the press stand, a die insertable into the cylinder and a pressure-generating punch insertable into the cylinder to generate the pressure necessary for the extrusion process in a pressure medium enclosed in the pressure chamber, said pressure medium surrounding a billet to be extruded, a mandrel part which shapes the hole through the tube, which includes a rod part passing slidably through the pressure-generating punch, said mandrel part being supported by said rod part, a first seal sealing between the high pressure cylinder and the pressure generating punch and a second seal sealing between the pressure generating punch and the mandrel, said second seal being axially stationary in relation to the first seal during the extrusion period of an operating cycle and approximately in the same radial plane as said first seal.

3,841,129

CONTINUOUS, HYDROSTATIC EXTRUSION PROCESS AND AN APPARATUS USING THE SAME

Masao Nishihara, Kyoto; Tatsu Fujita, Kobe; Yoshihiro Yamaguchi, Ashiya; Tomiharu Matsushita, and Masataka Noguti, both of Nishinomiya, all of Japan, assignors to Kobe Steel Limited, Kobe, Japan

Filed Mar. 15, 1973, Ser. No. 341,795

Claims priority, application Japan, Mar. 17, 1972, 47-27222

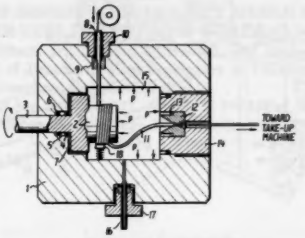
Int. Cl. B21c *33/00*

U.S. Cl. 72—60 **14 Claims**

1. A continuous, hydrostatic extrusion process, characterized in that said process comprises the steps of:

continuously charging a stock wire into a high pressure chamber through sealing means by utilizing the continuous winding action of an intermediate winding means provided within said high pressure chamber;

continuously winding said charged stock wire around said



intermediate winding means; and

continuously extruding said wound stock wire out of said chamber through an extrusion die under the influence of a hydrostatic pressure maintained within said chamber.

3,841,130

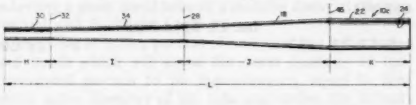
BALL BAT SYSTEM

Irvin C. Scott, Jr., and George F. Swenck, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 20, 1973, Ser. No. 417,695

Int. Cl. B21d *51/16*

U.S. Cl. 72—70 **4 Claims**



1. The method of making a metal body for a ball bat comprising the steps of

a. providing a cylindrical hollow metal work piece;

b. machining post of the length of the outside of the work piece, thereby reducing its wall thickness to a predetermined extent; and,

c. swaging down most of the machined portion of the work piece in successive swaging operations to form two abutting tapering sections, thereby shaping the work piece and increasing the thickness of the wall of the work piece to a predetermined extent where it had been thinned by machining, the offsetting effects of machining and swaging being such as to provide a tapered metal bat body having a predetermined wall thickness from one end to the other.

3,841,131

WRAPPER ROLL AND SUPPORT ASSEMBLY FOR A STRIP COILING MACHINE

John Gross; Andrew Kaloci, and La Verne H. Lutz, all of Salem, Ohio, assignors to Gulf & Western Manufacturing Company, New York, N.Y.

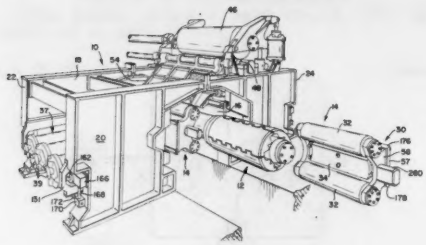
Filed May 7, 1973, Ser. No. 357,794

Int. Cl. B21c *47/00*

U.S. Cl. 72—148 **17 Claims**

1. A sheet metal coiling mechanism comprising, frame means, a mandrel rotatable relative to said frame means about an axis extending in a given direction, head means supported by said frame means, wrapper roll means rotatably supported

by said head means and cooperable with said mandrel to form the initial wraps of a coil of sheet metal to be formed around said mandrel, and means releaseably interengaging said head means and frame means for removal of said head means and



wrapper roll means as a unit from said frame means, said interengaging means including slidably interengageable guide means and guidway means on said head means and frame means extending in said given direction.

3,841,132

METHOD OF FLATTENING METAL STRIP EXHIBITING A DISCONTINUOUS YIELD POINT AND SUPPRESSING THE DISCONTINUOUS YIELD POINT

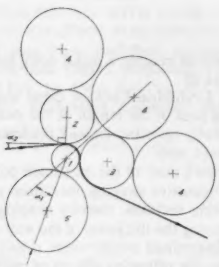
Norbert Kuhn, Coal Point, and Geoffrey Frank Harvey, South Wallsend, N.S.W., both of Australia, assignors to John Lysaght (Australia) Limited, Sydney, New South Wales, Australia

Filed Oct. 4, 1972, Ser. No. 294,983

Claims priority, application Australia, Oct. 14, 1971, 6634/71

Int. Cl. B21d *1/05*

U.S. Cl. 72—163 **3 Claims**



1. A strip flattening apparatus, comprising a work roll, a first reaction roll with its axis parallel to the axis of the work roll to define a first nip with said work roll, a second reaction roll with its axis parallel to the axis of the work roll to define a second nip with said work roll, means to draw a metal strip to be flattened through said nips and about that portion of the work roll between the nips while maintaining the strip under tension, at least one pressure roll contacting the work roll and loading it toward the two reaction rolls and means to control the line of approach of the strip to the first nip such that the strip enters the first nip at an angle to the tangent within the range of from 2° to 20° in the sense required to bend the strip about the work roll; the arrangement being such that there is a greater reaction force between the work roll and the first reaction roll than there is between the work roll and the second reaction roll.

3,841,133

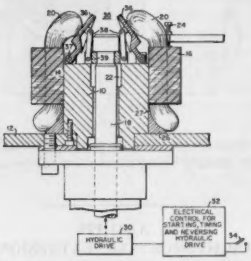
APPARATUS AND METHOD FOR SHAPING END TURNS OF COILS IN DYNAMO-ELECTRIC MACHINE CORES

Kenneth T. Rice, Jr., Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1973, Ser. No. 387,994

Int. Cl. B21b *15/00*

U.S. Cl. 72—168 **15 Claims**



1. Coil end turn shaping apparatus, for wound cores such as motor stators, comprising:

means for locating a wound core in a fixed position;

actuator means mounted to be axially movable in relation to said fixed position;

shaping means connected with said actuator means and at least partially movable therewith for forcing end turns radially outward over an end face of a core upon a predetermined movement of said actuator means;

said means for locating comprising a fixed cylindrical post; said actuator means comprising a member located axially within said post; and said shaping means comprising at least one element that has a first radial position when said axial member is in a first axial position and has a second radial position when said axial member is in a second axial position.

3,841,134

METHOD OF MAKING PROFILED RAILS AND BODIES COMPOSED THEREOF

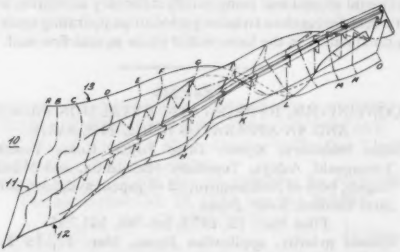
Raimund Falkner, Roppen, Austria, and Heinz Grune, Solingen, Germany, assignors to RAPENA Patent- und Verwaltungs-AG, Vaduz, Liechtenstein

Filed Jan. 16, 1973, Ser. No. 324,213

Claims priority, application Switzerland, Jan. 19, 1972, 759/72; Dec. 15, 1972, 18266/72

Int. Cl. B21d *5/08*

U.S. Cl. 72—181 **8 Claims**



1. A method of making profiled rails and bodies composed thereof by continuous forming of at least one metal band characterized by the steps of:

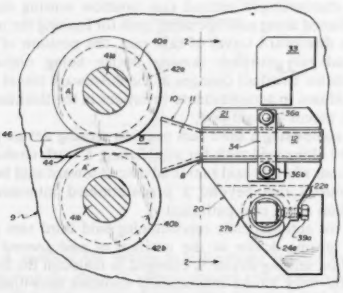
a. introducing initial undulations into parts of said band to facilitate subsequent profiling of said band by bending it at bending points between rotating pairs of forming rolls;
b. determining a directrix subdividing said metal band into a first area extending from one exterior edge to said directrix, and the second area extending from the other exterior edge to said directrix, said directrix coinciding with a marked longitudinal edge to be formed into said metal band;
c. turning at least one of said areas about said directrix so that the exterior edge associated with said area performs a swinging motion while the transverse distance of said associated exterior edge from said directrix is reduced step-by-step throughout the continuous forming process, thereby reducing accrued edge tensile stresses;
d. increasing said initial undulations of said parts of said band until the enveloping lines of said parts transverse to said metal band become longer than the enveloping lines of the longitudinal profile contemplated for said parts thereby leaving surplus width, whereby no thinning of the band will occur during subsequent upsetting; and
e. transversely upsetting said metal band at said bending points using the surplus width created by increasing said undulations, and bending said metal band with a curvature smaller than the band thickness into sharp-edged profile structures.

3,841,135

NON-STRIPPING TYPE BAR DELIVERY SYSTEM

Richard E. Natzke, Griffith, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Jan. 22, 1973, Ser. No. 325,659
Int. Cl. B21b *41/00*
U.S. Cl. 72—227 **5 Claims**



1. A delivery guide for use in the production of a long thin work piece wherein the work piece proceeds along from one mill stand to another mill stand and is engaged by pairs of rolls providing a plurality of selective roll passes, and said delivery guide assists in guiding the work piece from one pair of rolls to another pair of rolls, the improvement comprising:

a work piece delivery portion having a product receiving portion and an adjacent longitudinally extending chamber for guiding said work piece between successive roll passes;

bracket support means carrying the work piece delivery portion and having connecting means associated with a threaded post;

a pair of spaced wing portions on said bracket support means, each of said wing portions having aperture means for positioning said support means about said associated threaded post;

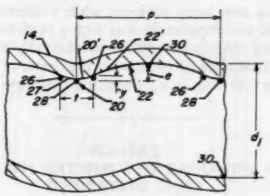
rotatable adjustment means operatively connected with the connecting means of the bracket support means and with the threaded post, whereby rotation of the adjustment means produces movement of the work piece delivery portion for alignment with a roll pass and also for selective movement of the work piece delivery portion from one roll pass to another roll pass.

3,841,136

METHOD OF DESIGNING INTERNALLY RIDGED HEAT TRANSFER TUBE FOR OPTIMUM PERFORMANCE

James G. Withers, Jr.; Edward P. Habdas, and Michael W. Jurmo, all of Dearborn, Mich., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 232,571, March 7, 1972, Pat. No. 3,779,312. This application June 29, 1973, Ser. No. 375,242
Int. Cl. B21d *53/06*
U.S. Cl. 72—367 **2 Claims**



1. A method of making a heat transfer tube having a single start helical ridge on its internal surface so that a single phase fluid flowing in the tube will have maximum heat transfer with the tube wall, comprising the steps of:

a. selecting a plain metal tube of a suitable material diameter and wall thickness;
b. corrugating at least a portion of said tube at a helix angle and depth which will cause the outer diameter of the corrugated portion to be approximately equal to the initial outer diameter of the tube and define the helical pitch "p" and the internal diameter, "d_i," the depth, "e" of such corrugations on the interior surface being selected so that e^2/Pd_i will be euqal to about 0.365×10^{-2}.

3,841,137

METHOD OF IMPROVING THE COLLAPSE STRENGTH OF CONDUITS

Parviz Mehdizadeh, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 4, 1973, Ser. No. 394,202
Int. Cl. B21d *3/02*
U.S. Cl. 72—367 **7 Claims**

1. A method of improving the hydrostatic collapse strength of metal conduit which has undergone a first rotary straightening treatment comprising subjecting said metal conduit to a second rotary straightening treatment.

3,841,138

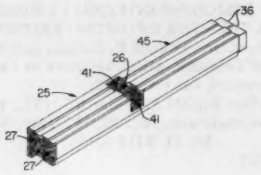
APPARATUS AND METHOD FOR FORMING AN ELONGATED TUBULAR MEMBER

Frederick W. Zinnbauer, Dearborn, and Jack C. Ferner, Detroit, both of Mich., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 25, 1972, Ser. No. 300,643
Int. Cl. B21d *9/03*
U.S. Cl. 72—369 **13 Claims**

1. A method of forming an elongated tubular member made of a metallic material, said method comprising the steps of, introducing a plurality of substantially spherical balls in said member, said balls being made of a substantially non-fracturable and non-crushable material having a stiffness and

strength at least substantially equal to the stiffness and strength of said metallic material, holding said balls confined within said member in a compacted manner with end support devices, and forming said member transversely to its elongated dimension while holding said balls compacted therein,



said forming step being achieved while resiliently supporting each of said end support devices with a predetermined force of controlled magnitude applied substantially parallel to the elongated dimension of and toward the center of said member to maintain said balls in a compacted condition.

3,841,139

METHOD AND APPARATUS FOR THE FORMING OF A LONG WORKPIECE

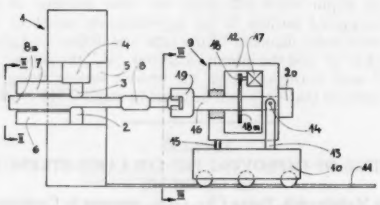
Horst Bachmann, Rodental, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany

Filed Mar. 16, 1972, Ser. No. 235,057

Claims priority, application Germany, Mar. 17, 1971, 2112643

Int. Cl. B21j *13/10*

U.S. Cl. 72—420 **2 Claims**



1. An apparatus for the forming of a long workpiece comprising a press having upper and lower forming saddles, the lower saddle being fixedly mounted, the upper saddle being movable in an upward and downward direction relative to the lower saddle, a manipulator arranged on one side of the press, the manipulator being provided with a rotatable gripping member for gripping and rotating a workpiece, means mounting the gripping member for tilting movement about a horizontal axis, whereby a parallel displacement of the workpiece axis during the forming is not possible and the workpiece, during each forming step, obtains a bend between the grip end and the saddles, means pushing the workpiece gradually forward between the saddles so that a bend which has developed during one forming step is corrected during a consecutive forming step with the rotation of the workpiece always being made in the same direction thereby effecting a corrective straightening force on the bent workpiece during each forming step, and support means for the workpiece on the opposite side of the press, the support means including a control plate attached to each saddle.

3,841,140

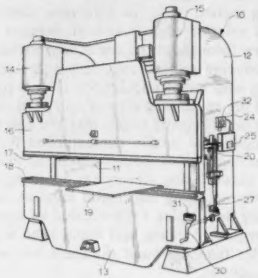
CONTROL SYSTEM FOR PRESS BRAKES AND THE LIKE

John F. Hryc, Chicago, Ill., assignor to Dreis & Krump Manufacturing Company, Chicago, Ill.

Filed Dec. 18, 1972, Ser. No. 315,810

Int. Cl. B21j *7/46*

U.S. Cl. 72—441 **10 Claims**



1. In a press brake of the type having a frame, a bed, a ram, and drive means on said frame for reciprocating said ram along a defined operating path toward and away from said bed, a control system comprising:

means comprising a first ram position sensing device positioned along said operating path for limiting the maximum upward travel of said ram;

means comprising a second ram position sensing device positioned along said operating path for limiting the maximum downward travel of said ram, the position of said second ram position sensing device being operator-adjustable to effect changes in the downward travel limit of said ram to accommodate variations in the thickness of work pieces on said bed;

means comprising a third ram position sensing device positioned along said path for establishing a work stroke for said ram wherein said ram is advanced toward said bed at a reduced rate beyond a predetermined intermediate location along said path; and

means for automatically repositioning said third ram position sensing device as the position of said second ram position sensing device is changed to maintain the length of said work stroke substantially constant notwithstanding said operator-initiated changes in the downward travel limit of said ram.

3,841,141

DIE CHANGING APPARATUS

Stanley Rachwal, 7168 Miller, Swartz Creek, Mich. 48473

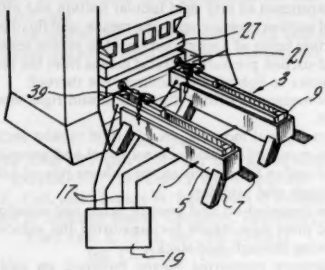
Filed July 9, 1973, Ser. No. 377,574

Int. Cl. B26d *7/26*

U.S. Cl. 72—446 **15 Claims**

1. Apparatus for removing dies from a vertical press having a bed for receiving the dies, comprising support means, a die support member carried by the support means and vertically adjustable relative thereto, and having a die carrying upper surface therein, means for vertically moving said die support member relative to the support means whereby the die carrying upper surface can be vertically aligned with the bed of the press, a die moving member mounted on said support member for reciprocating movement, means for reciprocating said die moving member and push and pull means carried by said die

moving member adapted to be connected by a tension member to a die in the press whereby the die can be pulled by said

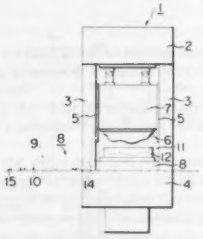


die puller onto said die supporting surface, or to directly contact the die to push it onto the press.

3,841,142
METHOD AND APPARATUS FOR SETTING SELF-MOVING BOLSTER IN PRESSES

Hisayoshi Aisuta; Teiji Ueda; Yokichi Koezuka, and Hiroshi Asamoto, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed June 12, 1972, Ser. No. 262,106
Int. Cl. B21j *13/02*
U.S. Cl. 72—448 **4 Claims**

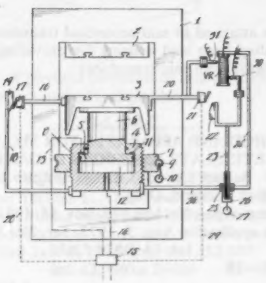


1. A method for setting a self-moving bolster in a press comprising the steps of advancing said self-moving bolster on rails into a press room of said press; stopping said bolster by abutting an abutting member provided on the lower surface of a carrier for said bolster against an abutting member provided on the upper surface of a bed in said press room; said abutting member of said bolster being provided with a vertical abutting surface and also being provided with a center which conforms with a longitudinal center line of said carrier; with said abutting member of said bed being provided with a vertical abutting surface engageable with said vertical abutting surface of the abutting member of said bolster; actuating a raising and lowering mechanism provided for said bolster in order to lower said bolster by retracting wheels provided on said bolster; and engaging two positioning members, each having a cross-shaped engaging projection and being provided on the lower surface of said bolster with two position holes, each having a cross-shaped groove and being provided on the upper surface of the bed in said press room, one of said positioning members being arranged on one side of the longitudinal center line at one end of said carrier, and the other of said positioning members being arranged on the other side of the longitudinal center line at the other end of said carrier, one of said positioning holes being arranged at a position to engage with one of said positioning members, and the other of said positioning holes being arranged at a position to engage with the other of said positioning members, whereby the bottom portion of said bolster is brought into close contact with the bed in said press room.

3,841,143
APPARATUS FOR CONTROLLING THE ACTUATION OF AN ACCESSORY DEVICE IN AN OIL PRESSURE ACTUATED PRESS

Suguru Harada, Sagamihara, and Moritaka Kuroyanagi, Tokyo, both of Japan, assignors to Aida Engineering, Ltd., Kanagawa-ken, Japan

Filed Apr. 2, 1973, Ser. No. 346,908
Claims priority, application Japan, Aug. 31, 1972, 47-86602
Int. Cl. B21j *13/08*
U.S. Cl. 72—453 **4 Claims**



1. In an oil pressure-actuated press which comprises a pair of limit switches for operating at the upper and lower limits of the stroke of a slide, respectively, for controlling an oil pressure controlling electromagnetic valve associated with a pressurized oil cylinder which operates said slide and in which the operative position of at least one of said limit switches is variable so as to vary the stroke distance of said slide, the improvement comprising an apparatus for controlling the actuation of an accessory device in said press, said apparatus comprising a power source, a stationary variable resistance connected to one terminal of said power source, a stationary contact engaging said variable resistance and connected to the other terminal of said power source, the position of said stationary contact being variable in response to change in said operative position of at least one of said limit switches, a shifting contact in engagement with said variable resistance and Schmidt trigger circuits having inputs connected to said shifting contact and outputs connected to the input of a press accessory device actuation means.

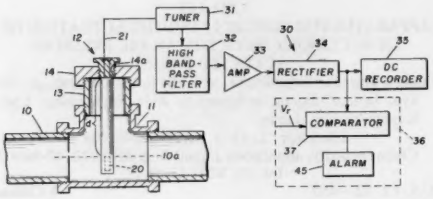
3,841,144
SAND DETECTION PROBE

Willett F. Baldwin, Dallas, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed Oct. 12, 1972, Ser. No. 297,175
Int. Cl. G01n *15/02*
U.S. Cl. 73—61 R **20 Claims**

1. A means for detecting the presence of particulate material in a flow stream through a conduit, said means comprising:
a probe means having a housing;
acoustical transducer means freely suspended within said housing, said transducer means responsive to vibratory energy implied thereon to generate a signal corresponding to said energy;
means in said housing for allowing said housing to be filled with a noncompressible fluid;

means on said probe means adapted for positioning said housing directly into the flow stream through said conduit so that when said probe is in place within said conduit the flow stream will impinge directly onto said housing; and



means attached to said acoustical transducer means and extending from said housing for providing an output of said signal from said transducer.

3,841,145

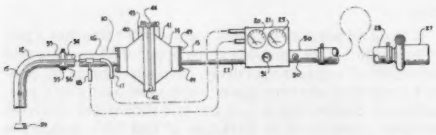
METHOD AND APPARATUS FOR MEASURING PARTICULATE EMISSIONS IN GAS FLOW

Richard W. Boubel, Corvallis, Oreg., assignor to Rader Companies, Inc., Portland, Oreg.

Continuation of Ser. No. 198,779, Nov. 15, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,310

Int. Cl. B01d *53/30*

U.S. Cl. 73—28 **2 Claims**



1. A sampler for measuring particulate emissions in a gas flow, comprising

an inlet nozzle adapted for insertion into a stack or like conduit through which a gas is flowing;

pitot tube means attached to said nozzle and adapted for insertion into said stack with said nozzle for measuring the velocity of gas flowing through said stack;

filter means disposed downstream of said nozzle for collecting particulate matter from said gas, said filtering means comprising an upstream housing section and a downstream housing section, said upstream and downstream housing sections being removably connected together at least at one edge thereof to facilitate rinsing of the sampler upstream of said downstream section, a screen support disposed between said upstream and

said downstream sections, and a sheet of filter material supported on said screen support and removably disposed between said upstream and downstream sections;

a substantially unobstructed cylindrical tube disposed between said inlet nozzle and said filter means for conducting all said gas directly from said inlet nozzle to said filter means, whereby the entire flow of gas passing through said inlet nozzle impinges on said sheet of filter material;

suction pressure applying means disposed at the downstream end of said sampler for causing a flow of gas from said stack into said inlet nozzle and through said sampler;

tubular means disposed between said filter means and said suction pressure applying means for conducting gas through said sampler responsive to suction pressure applied by said suction pressure applying means, said tubular means comprising a rigid tubular section attached to said filter means and a flexible tubular section disposed downstream of said rigid tubular section and attached to said suction pressure applying means, said flexible tubular section being of a length sufficient to permit separation of said suction pressure applying means from the rest of said sampler to lighten and facilitate use thereof;

a flow-measuring orifice disposed in said rigid tubular section;

a control panel mounted on said rigid tubular section;

means mounted on said control panel and associated with said orifice for measuring the volume rate of gas passing through said sampler;

means mounted on said control panel and associated with said pitot tube means for measuring the velocity of gas flowing through said stack;

temperature measuring means mounted on said control panel and adapted to measure the temperature of the gas passing through said rigid tubular section; and

control valve means disposed in said rigid tubular section downstream of said orifice for adjusting the volume rate of gas passing through said sampler to make the same kinetically equivalent to said velocity of gas flowing through said stack.

3,841,146

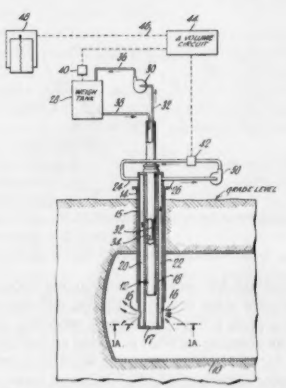
AUTOMATED VOLUME MONITORING SYSTEM

Newbold O. Cross, Berkeley Heights, and Jeffrey L. Thompson, Hopatcong, both of N.J., assignors to Esso Research and Engineering Company, Linden, England

Filed Mar. 26, 1973, Ser. No. 344,993

Int. Cl. G01m *3/32*

U.S. Cl. 73—49.2 **10 Claims**



1. An automated volume monitoring system for a product storage tank comprising:

a. a vertically adjustable tube for containing product at a predetermined test level and adapted to be disposed in the fill pipe of said storage tank;

b. thermal sensor means for sensing the average temperature of said product;

c. suction means operably disposed for contact with said product surface substantially at said predetermined test level within said tube;

d. a reservoir for containing a predetermined amount of said product;

e. level maintenance means connected to said suction means and said reservoir operable in response to a change in said predetermined test level so as to maintain said test level substantially constant;

f. drain means connected between said reservoir and said tube for supplying product from said reservoir to said tube when said suction means loses contact with said product surface until said predetermined test level is obtained; and

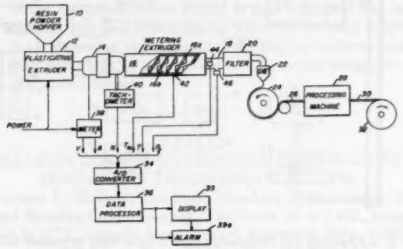
g. load cell means operably associated with said reservoir for measuring any weight change of the product therein.

3,841,147

METHOD AND APPARATUS FOR DETERMINING THE INHERENT VISCOSITY OF A LIQUID

Michael K. Coll, and Thomas W. Eder, both of Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,511
Int. Cl. G01n *11/00*
U.S. Cl. 73—56 **7 Claims**



1. A machine method for determining the inherent viscosity of a liquid being processed in an extruder, said method comprising the steps of:

1. determining the value of actual power consumed by the extruder at a selected time during the extrusion process, and

2. converting the value of actual power into data representing the inherent viscosity of the liquid by

a. determining the value of the theoretical power consumed by the extruder in extruding a liquid with a predetermined value of inherent viscosity, and

b. comparing the value of the actual power consumed by the extruder with the determined value of the theoretical extruder power.

3,841,148

TETRAHEDRAL STEREOTAXIC JIG

Edward B. Becker, New Orleans, La., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

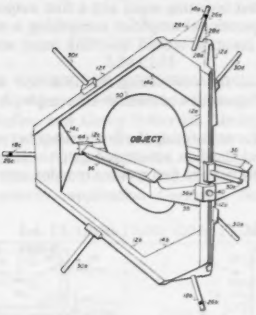
Filed Dec. 21, 1973, Ser. No. 427,196
Int. Cl. G01m *1/00*
U.S. Cl. 73—65 **7 Claims**

1. A stereotaxic jig of the character described, said jig comprising:

a framework comprising six edge bars of substantially equal length and cross sectional area, said six edge bars being joined together substantially in the form of an equilateral tetrahedron with each end of each edge bar being connected to ends of two other edge bars substantially at each vertex of said tetrahedron;

object holding means, mounted on said framework, for securing an object in a selected position substantially within said tetrahedron; and

means, disposed at predetermined locations on said framework, for cooperation with support means during measurements of physical constants of said jig in combination with an object and of said jig alone.

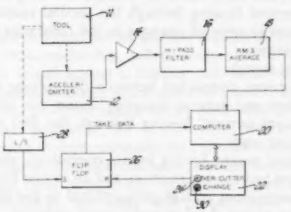


3,841,149

TOOL WEAR DETECTOR

Allan I. Edwin; Thomas L. Vlach, and Melvin T. Bennett, all of Ann Arbor, Mich., assignors to Interactive Systems, Inc., Ann Arbor, Mich.

Filed Jan. 8, 1973, Ser. No. 322,037
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.4 **10 Claims**



1. Apparatus for detecting a tool wear condition comprising: input means for obtaining signals representing discrete values of the energy level of a signal quantity produced during operation of the tool, first means for establishing a reference value representing the energy of the tool in a first relatively unworn condition, second means connected to said input means for maintaining a running average of a predetermined number N of said signals taken at substantially regular and successive intervals during utilization of the tool, and output means for producing an indication when said running average varies from said reference value by a predetermined amount.

3,841,150

STRAIN GAUGE TRANSDUCER SIGNAL CONDITIONING CIRCUITRY

Robert P. Pearson, Saint Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 2, 1973, Ser. No. 412,134
Int. Cl. G01b *7/18*; G01l *9/04*
U.S. Cl. 73—88.5 R **9 Claims**

1. In a strain gauge comprising a first resistor and a second resistor carried by a substrate so that a variable strain is ap-

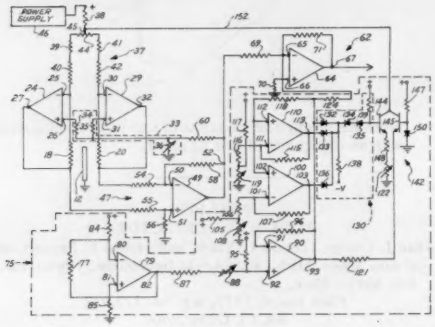
plied to the resistors in response to changes in the environment, improved apparatus for determining the changes in the environment by measuring the variations in an electrical property of the resistors comprising in combination:

a first operational amplifier conprising a first noninverting input, a first inverting input and a first output;

a second operational amplifier comprising a second noninverting input, a second inverting input and a second output;

circuit means for connecting the first and second noninverting inputs to a current sink having a predetermined voltage;

first means for connecting the first resistor between the first output and the first inverting input so that the current flowing through the first resistor remains constant in spite



of changes in the resistance of the first resistor;

second means for connecting the second resistor between the second output and the second inverting input so that the current flowing through the second resistor remains constant in spite of changes in the resistance of the second resistor;

a voltage source;

biasing means connected between the voltage source and the first and second inverting inputs for adjusting the quiescent current flowing through the first and second resistors; and

differential means having inputs operatively connected to the first and second resistors and an output for producing a measurement voltage proportional to the difference in voltage across the first and second resistors.

3,841,151

COATING FOR VEHICLE TEST BED ROLLERS

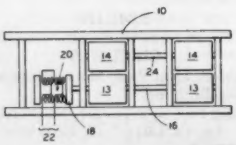
John Anthony Marten, Swan Lodge Hall, Holt, England

Continuation-in-part of Ser. No. 124,403, March 15, 1971, abandoned. This application Dec. 27, 1972, Ser. No. 318,906

Claims priority, application Great Britain, Mar. 17, 1970, 12867/70

Int. Cl. G01l 5/13

U.S. Cl. 73—117 **4 Claims**



1. In a vehicle test bed having high speed capabilities and at least one pair of spaced parallel rollers for driving engagement with at least one wheel of a vehicle to be tested, an improved surface coating located on at least a wheel engaging a portion of at least one roller, said surface coating comprising molybdenum, ceramic, and stainless steel particles and characterized by a substantial degree of blending between said particles to form a composite molybdenum-ceramic-stainless steel core within said surface coating.

3,841,152

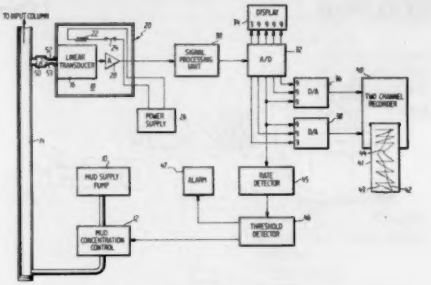
DRILLING CONDITIONS MONITOR

Robert J. Guest, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 2, 1973, Ser. No. 329,147

Int. Cl. E21b 47/06

U.S. Cl. 73—151 **5 Claims**



1. Apparatus for indicating down hole well pressure conditions in a wellbore containing pumping means for circulating a drilling fluid down into and up out of said wellbore comprising:

a housing having an interior chamber and adapted to be mounted adjacent a pipe carrying drilling fluid;

means for communicating the pressure of the drilling fluid within the pipe to the interior chamber of said housing;

means for maintaining the housing interior chamber at a constant temperature;

a linear pressure transducer located within the interior chamber and adapted to sense the pressure of said drilling fluid and to produce an electrical signal having an amplitude related to the drilling fluid pressure;

means within the housing interior chamber for linearly amplifying said electrical signal thereby to produce an amplified analog electrical signal;

means for producing a digital signal having at least three digits responsive to the amplitude of the analog electrical signal; and

means for displaying one or more of the least significant digits of the digital signal to provide a quickly readable indication of the direction and rate of drilling fluid pressure changes.

3,841,153

GAGE FOR MEASURING THE TENSION IN EXTENSION SPRINGS

Louis Michelson, Newton, Mass., assignor to Lion Precision Corporation, Newton, Mass.

Filed Aug. 21, 1972, Ser. No. 282,328

Int. Cl. G01l 1/04

U.S. Cl. 73—161 **4 Claims**

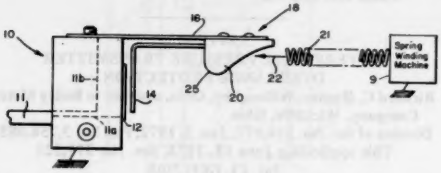
1. A gage for measuring an indication of the intercoil tension in a coiled extension spring comprising:

sensing means including a fixed element on said gage and a spaced apart confronting movable element forming a gap therebetween;

a resilient spring member having one end fixed to said gage and the other end coupled by cam means to the movable

element, said movable element forming a deflecting tip which deflects and causes a widening of said gap when a force is exerted against it in a first direction;

a measuring means coupled to said fixed and movable elements, said measuring means providing an output signal which varies with variation in said gap between said fixed and movable elements, and means for urging a free end of the coiled extension spring in said first direction into contact with said deflecting tip whereby the force exerted is such that the amount said deflecting tip deflects varies with variations in the tension of said coiled extension of said coiled spring.



3,841,154

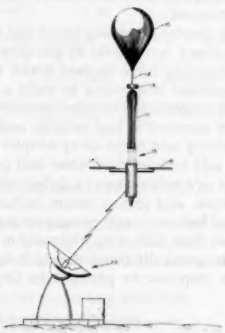
BALLOON BORNE DIFFERENTIAL TEMPERATURE SENSOR AND TRANSMISSION SYSTEM

Lawrence E. Mallery, San Jose; Theodore Arken, Sunnyvale, and Henning C. Swenson, Jr., Los Gatos, all of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Dec. 26, 1972, Ser. No. 318,090

Int. Cl. G01w *1/08*

U.S. Cl. 73—170 R **4 Claims**



1. A system for continuously measuring differential temperature from the ground level to the tropopause comprising

a gas-filled meteorological balloon and

measuring and transmitting apparatus supported by said balloon during an ascending flight comprising

two substantially identical probes having resistances which vary with temperature,

means for detecting relative changes in resistance of said probes and producing an electrical signal having a value corresponding to the difference in temperature at said probes,

a radio frequency transmitter comprising

an oscillator,

modutor means for turning said oscillator on and off to produce pulses having a repetition frequency, and means for applying a signal proportional to said differential temperature signal to said modulator means for varying the pulse repetition frequency of said oscillator at a rate corresponding to the value of said differential temperature signal, and

receiver means on the ground adapted to receive said pulses.

3,841,155

REACTION VESSEL FOR ISOTHERMAL CALORIMETRY

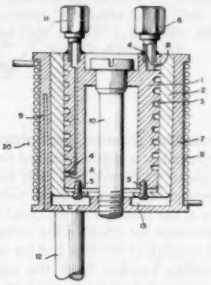
Waldemar Koehler; Oswald Riedel; Herbert Scherer, all of Ludwigshafen, and Georg Schlereth, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 24, 1972, Ser. No. 308,998

Claims priority, application Germany, Nov. 25, 1971, 7144398

Int. Cl. G01k *17/00;* **G01n** *25/22*

U.S. Cl. 73—190 R **5 Claims**



1. A reaction vessel for isothermal calorimetry embodying a hollow, heat-conducting, substantially cylindrical, heating cup-shaped vessel having a heating coil about said heating vessel, a container snugly and removably fitted in said heating vessel, and temperature sensor means positioned in said vessel adjacent said container, the improvement which comprises two concentric, hollow, substantially cylindrical bodies snugly fitted together to form said container with the outer wall of the inner hollow body lying snugly against the inner wall of the outer hollow body, the outer wall of said outer body lying snugly against the inner wall of said vessel, a spiral groove in at least one of said walls forming a spiral passage between walls, passage means in one of said bodies for supplying a gas to one end of said spiral groove, additional passage means in one of said bodies for withdrawing gas from the other end of said spiral groove, and a sample of powdered or granulated solids in said spiral groove, whereby said spiral groove may be filled with a weighed amount of said powdered or granulated sample by vibrating said container apart from said heating vessel, gas may be passed through the sample-filled spiral groove after mounting of said container in said heating vessel for isothermal calorimetric studies and said sample may be cleansed from said spiral groove by removal of said container and disassembly of said hollow bodies to expose said spiral groove.

3,841,156

COMBINED DEPTH INDICATOR AND WATER SAMPLER

Court L. Wolfe, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

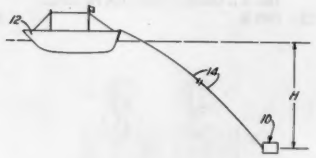
Filed Dec. 14, 1972, Ser. No. 315,072

Int. Cl. G01f *23/16;* **G01n** *1/10*

U.S. Cl. 73—291 **8 Claims**

1. Apparatus for sampling a fluid at a sampling location, delivering the sample to a remote location vertically spaced an

unknown distance from the sampling location and determining at the remote location the pressure at the sampling location comprising a flexible conduit having a first end adapted to be located at the remote location and a second end connected to sampling apparatus adapted to be located at the sampling location; said sampling apparatus comprising a sampling conduit having one end connected to said second end of the flexible conduit, a check valve in the sampling conduit and adjacent the second end, said check valve being adapted to allow flow only in one direction from the sampling conduit through the second end and through the flexible conduit to the first end, a pressure relief valve positioned adjacent the second end having an inlet communicating with the sampling conduit between the check valve and the first end and an outlet for communicating with the other end of the sampling



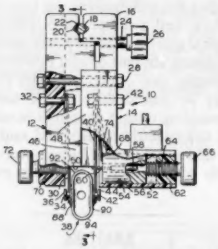
conduit at the sampling location, said pressure relief valve being set to be opened at a predetermined pressure and constructed and arranged to permit flow only from the first end of the conduit through the pressure relief valve upon application of a pressure at the first end of the conduit exceeding the predetermined pressure for opening the valve; suction means connected to the conduit at the first end for drawing a sample through the sampling conduit from the sampling location, pressure means connected to the conduit at the first end for delivering a fluid of the same phase as the sampled fluid through the flexible conduit at a pressure to overcome the predetermined pressure setting of the pressure relief valve, and means at the remote location for measuring the pressure in the flexible conduit at the remote location.

3,841,157

DROP BULB PRESSURE-MEASURING DEVICE

Charles B. Willock, 16222 S.E. Oatfield Rd., Milwaukie, Oreg. 97222

Filed May 31, 1973, Ser. No. 365,474
Int. Cl. G01l *19/00*
U.S. Cl. 73—389 **12 Claims**



1. A drip bulb adapted to be supported in a vertical position for providing the vertical dispensing of liquid droplets through a gaseous region into a quantity of liquid contained in said drip bulb, and adapted to be pressure-responsive, said drip bulb comprising;

a container body for holding said quantity of liquid, said body having an opening proximate the top thereof for ingress of liquid and having an opening proximate the bottom thereof for egress of liquid,

wherein said drip bulb is provided with at least one flexible side wall,

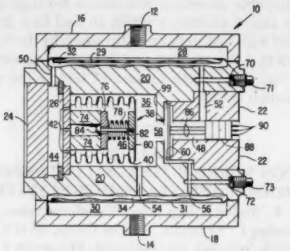
and movement-responsive means adapted to detect movement of said side wall as the result of pressure changes within said drip bulb.

3,841,158

DIFFERENTIAL PRESSURE TRANSMITTER OVERRANGE PROTECTION

Richard C. Hunter, Willoughby, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Division of Ser. No. 214,677, Jan. 3, 1972, Pat. No. 3,756,085.
This application June 18, 1973, Ser. No. 371,321
Int. Cl. G01l *7/08*
U.S. Cl. 73—407 R **6 Claims**



1. An overrange pressure limiting device for pressure sensing instruments comprising:

an easily deflected bellows subjected to the pressure sensed by the instrument;

a break-away coupler remaining intact and stationary up to a predetermined force level by providing an equal but opposite restoring force beyond which force level said coupler becomes inoperative to exert a restoring force including a magnetically coupled permanent magnet and strike plate enclosed in said bellows; and

means for joining said break-away coupler to said bellows to render said bellows rigid when said coupler is intact, and render said bellows free to deflect when said coupler is inoperative, said joining means including a rod connecting said bellows to said permanent magnet to prevent said bellows from deflecting while said magnet and strike plate are magnetically coupled, said bellows changing in volume in response to pressure to limit the pressure thereby.

3,841,159

AUTOMATIC SAMPLER FOR FLOWING STAPLE FIBER

Marion Archer Wilder; Charles Spurgeon Ward, and Allen Edens Ward, all of Columbia, S.C., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,325
Int. Cl. G01n *1/20*
U.S. Cl. 73—422 R **6 Claims**

1. An automatic sampler to remove samples of staple fiber flowing through a transfer line comprising

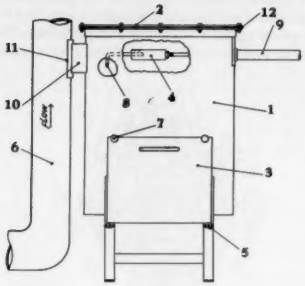
a sample container sealed to withstand the pressure in said transfer line and said container

communicating with said transfer line through a short conduit to an opening in said transfer line, said conduit being sealed at said opening,

said container supporting within and near the top of said container a catching means for flowing fiber connected to

a means to thrust said catching means into said conduit and said opening in said transfer line and return said catching means to within said container, said catching means prevented from rotating and arranged to release caught fiber upon return to said container, and

means to remove said fiber from said container.



3,841,160

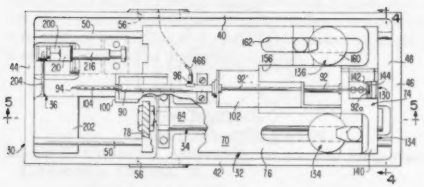
AUTOMATIC SAMPLER APPARATUS

Kumiry Roy Iwao, Lafayette, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 5, 1973, Ser. No. 337,802

Int. Cl. G01n *1/28*

U.S. Cl. 73—422 GC **3 Claims**



1. A fluid sample apparatus for injection into a chromatograph:

a. an injection syringe defined by a tubular syringe barrel, a canula extending from said syringe barrel, a side-arm defining a side arm location, and a plunger movably supported in said barrel;

b. syringe barrel supporting structure;

c. plunger supporting structure;

d. an actuator connected between said syringe barrel supporting structure and said plunger supporting structure for reciprocating said syringe barrel and said plunger relative to each other so that said plunger is movable into and out of said syringe barrel; and

e. dosage stop means in operation reacting between said syringe barrel supporting structure and said plunger supporting structure for limiting relative motion of said plunger into said syringe barrel to control volume of fluid in said injection syringe when said plunger is between said side-arm location and said canula;

f. said dosage stop means comprising:

i. a stop element movable between a first position wherein said syringe barrel and plunger supporting structures are freely movable with respect to each other and a second position wherein said stop element reacts between said structures for limiting relative movement therebetween; and

ii. locating means for detachably connecting said stop element to one of said supporting structures;

g. said dosage stop means supported on said one supporting structure for adjusting movement relative to both of said supporting structures to adjustably position said stop element to control the dose in said syringe barrel and said locating means effective to secure said dosage stop means in said adjusted position wherein said actuator comprises a doubleacting ram operable to move one of said structures to a position in engagement with said stop element when said stop member is in said second position and to maintain said one structure in said position without exerting substantial force on said stop element, and further comprising a stop element actuator for moving said stop element to said first position from said second position.

3,841,161

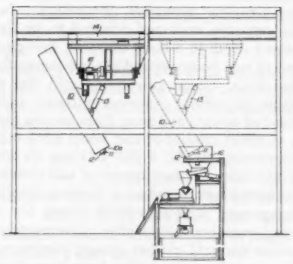
OVERHEAD, EXTENSIBLE SAMPLING DEVICE

Fred R. Huntington, Salt Lake City, Utah, assignor to The Galigher Company, Salt Lake City, Utah

Filed Oct. 13, 1971, Ser. No. 188,747

Int. Cl. G01n *1/08*

U.S. Cl. 73—424 **14 Claims**



1. An overhead, extensible sampling device for gathering samples from the surface portions of bulk, solid, particulate material comprising:

a. an elongated outer housing selectively movable over said material and having an open sampling end positionable so that said open end is in close proximity to the solid, particulate material to be sampled;

b. extensible sampling means enclosed within said outer housing comprising a tubular barrel of smaller diameter and substantially shorter than said outer housing, said barrel containing a fitted auger of substantially the same length as said barrel and rotatable therein, said barrel and auger being at least partially extensible as a unit beyond the open end of said outer housing, said barrel having an open collecting end through which the tip of said auger projects slightly;

c. extending means attached to said tubular barrel to extend at least a portion of said barrel and auger beyond said open sampling end of said outer housing for forcing said open collecting end of said barrel and the tip of said auger into said solid, particulate material for extracting a sample therefrom;

d. retracting means to retract said barrel and auger from an extended position to a retracted position substantially within said outer housing; and

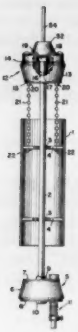
e. frame means for dependently supporting said outer housing.

3,841,162

OPERATING APPARATUS FOR WATER SAMPLERS

Terry L. Duperon, Saginaw, Mich., assignor to Trippensee Corporation, Saginaw, Mich.

Filed Dec. 13, 1972, Ser. No. 314,498
Int. Cl. G01n 1/10
U.S. Cl. 73—425.4 R 10 Claims



1. Water sampling apparatus comprising a hollow body open at its opposite ends and adapted to be lowered to a predetermined depth in a body of water; first closure means for one end of said body; second closure means for the other end of said body; means connecting said first and second closure means for relative movements toward and away from one another and toward and away from the associated ends of said body to effect closure of said body; latch means carried by said connecting means; a pair of clasp members; means mounting said clasp members on one of said closure means for linear movements toward and away from one another into and out of engagement with said latch means for respectively disabling and enabling said relative movements of said connecting means and said closure means; biasing means acting on said clasp members and urging them toward one another; and motion transmitting means fixed to each of said clasp members and being spaced from one another, the spacing between said motion transmitting means being such as to accommodate therebetween a messenger operable to effect movement of said clasp members away from one another when said clasp members engage said latch means and thereby effect the disengagement of said latch means by said clasp members, whereby said closure members are enabled to effect closure of said hollow body.

3,841,163

TEST DUMMY SUBMARINING INDICATOR SYSTEM

Roger P. Daniel, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

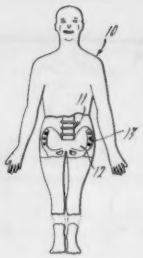
Filed June 8, 1973, Ser. No. 368,400
Int. Cl. G01f 15/06; G01b 9/00
U.S. Cl. 73—432 SD 7 Claims

1. A test apparatus for indicating slippage under load of a restraining belt relative to an iliac-contoured surface of an anthropomorphic dummy and about which said belt surrounds, said apparatus comprising:

a. means for decelerating said dummy along a path generally normal to the extent of said iliac-contoured surface,

b. means securing opposed ends of said belt so that a plane containing the arcuately shaped belt passes through said surface with the belt in engagement with said surface to secure said dummy against deceleration, and

c. means embedded in said iliac-contoured surface for continuously sensing the existence or non-existence of forces



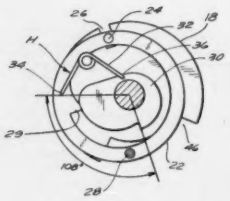
applied by said belt at specific elevations along said iliac-contoured surface.

3,841,164

TUNER DRIVE ASSEMBLY WITH NEUTRALIZED BIAS FOR ENHANCED STABILITY

Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed Apr. 2, 1973, Ser. No. 347,221
Int. Cl. H03j 1/06; F16h 35/18
U.S. Cl. 74—10.54 6 Claims



1. A tuner drive assembly having an actuating member, a coarse tuning shaft, a fine tuning shaft and first and second means connecting said shafts respectively to said actuating member for operating the latter, said first means comprising a pair of relatively movable parts which normally rotate together, said second means comprising a cam, and, situated on one of said parts, a cam follower engaging said cam, said cam being drivingly connected to said fine tuning shaft and movement of said cam causing relative movement between said parts, and biasing means operatively active on said cam follower to maintain an operable connection between said cam and said cam follower, said biasing means being effective to exert a resultant force substantially normal to the surface of said cam for substantially all positions of said cam.

3,841,165

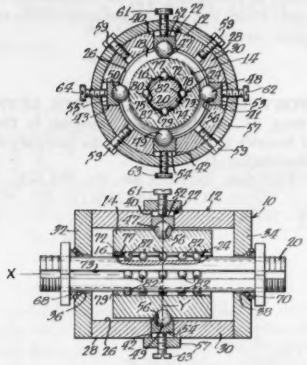
MOTION CONVERTER

James D. Layfield, 3285 Chadbourne, Cleveland, Ohio 44120, and William M. Benzing, 7721 S. Coles Ave. South, Apt. A, Chicago, Ill. 60649

Filed May 16, 1973, Ser. No. 360,758
Int. Cl. F16h 25/08
U.S. Cl. 74—56 16 Claims

1. A mechanism for converting between rotary and linear motion comprising: wall means defining a cylinder and a plurality of recesses within said wall means and located at

circumferentially spaced intervals; a piston located within said cylinder and having an axial passage extending therethrough, and a continuous groove about the periphery thereof, said groove defining a plurality of intersections with a plane transversely intersecting the axis of said piston, at least the bottom portion of said groove having a curved cross-section; an elongated shaft extending into said axial passage along the axis of said cylinder; rotary antifriction spline means extending longi-



tudinally along said shaft and said piston for coupling said shaft and piston together rotationally and providing rolling contact between said shaft and said piston; and a plurality of rotary antifriction guide means mounted within said cylinder recesses and received within said groove for forcing said piston to reciprocate axially within said cylinder when said shaft is rotated, or for forcing said shaft to rotate when said cylinder is reciprocated, while minimizing friction.

3,841,166

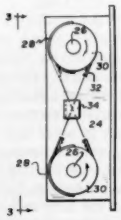
VIBRATORY APPARATUS

Donald E. Gerberich, Aurora, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 13, 1972, Ser. No. 262,386

Int. Cl. F16h *33/00*

U.S. Cl. 74—61 **3 Claims**



1. In a vibrating device having at least a pair of side-by-side motors with eccentric weights attached to the ends of each motor shaft and with the motor shafts rotating in opposite directions to provide vibratory motion in one direction, the improvement comprising a toothed sprocket connected to each motor shaft, a timing belt engaging said sprockets in a figure-8 configuration to insure synchronization of the rotating motor shafts, and means separating said belt at the crossover location to reduce frictional contact between the portions of said belt at said location.

3,841,167

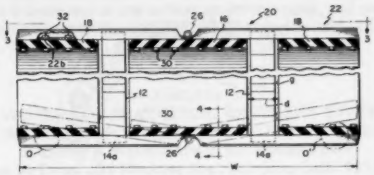
HINGED CLEAT FOR SNOWMOBILE DRIVE TRACK

Donald G. Reedy, Caro, Mich., assignor to Special Sports Products Corporation, Caro, Mich.

Filed Aug. 17, 1973, Ser. No. 389,378

Int. Cl. F16g *1/00*; **B62d** *55/08*

U.S. Cl. 74—231 R **8 Claims**



1. An endless drive track for propelling a snowmobile and the like comprising:

a central drive belt adapted to travel in an endless path;

a pair of generally coextensive, laterally outer, drive belts, disposed on laterally opposite sides of, and in parallel relation with, said central drive belt, said laterally outer belts being adapted to travel in endless paths of travel;

a plurality of ground-engaging cleats mounted on and spaced along said drive belts, each of said cleats including a pair of transversely extending, ground-engaging cleat sections spanning said central belt and said laterally outer belts; and

means swingably connecting said cleat sections permitting one of said cleat sections to swing relative to the other cleat section so that said cleat sections can mate with the surface being traversed.

3,841,168

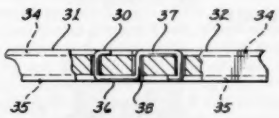
TEMPORARY REPLACEMENT DRIVE BELT FOR AUTOMOTIVE VEHICLES

Donald H. Daniels, Phoenix, Ariz., assignor to Roger Demchak, Cambria, Calif., a part interest

Filed Sept. 18, 1973, Ser. No. 398,562

Int. Cl. F16g *1/00*

U.S. Cl. 74—231 J **5 Claims**



1. A replacement drive belt for installation between a drive wheel and a driven wheel which comprises:

a. an elastically extensible belt having first and second opposing surfaces adapted to engage the drive wheel and the driven wheel; said belt having first and second ends;

b. first and second grooves formed in said first and second opposing surfaces respectively at least adjacent said first and second ends thereof;

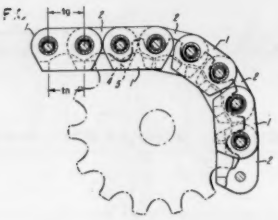
c. first and second holes formed in said first and second ends respectively, said holes extending between the first and second grooves formed in said belt, and

d. coupling means for securing the ends of said belt in adjacent position, said coupling means extending through said first and second holes and engaging the first and second grooves in the opposing surfaces of said belt whereby said coupling means resides within said grooves and holes.

3,841,169
FLAT LINK CHAIN

Alfons Bisewski, Hagen, Germany, assignor to Ruberg & Renner GmbH, Hagen, Germany

Filed Jan. 10, 1973, Ser. No. 322,561
Int. Cl. F16g 13/02
U.S. Cl. 74—250 R 13 Claims

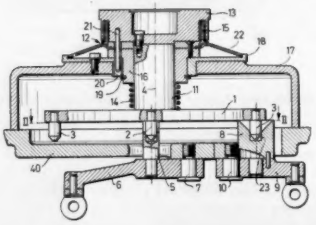


1. A link chain comprising in combination outer chain link means and inner chain link means, and pivot means respectively extending transverse to and through said outer and inner chain link means and pivotally connecting said inner and outer chain link means to each other at pivot locations subject to wear occurring positively and encountered for pulling load, said inner and outer link means respectively including abutment means located upon inner side of the chain during bending in a predetermined range and operable in straight pulling condition of the pertaining chain link means to abut each other in pairs along planes transverse to the straight longitudinally extending chain portion comprising the respective abutment means having surfaces that move toward each other during bending, said abutment means when abutting each other being spaced from each other by a distance equalling the pitch of said chain thereby to avoid effect of change in chain length by way of wear especially under pulling load.

3,841,170
MULTI-STEP TRANSMISSION WITH AN INDEXING DISK

Horst Lanzenberger, Munich, Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Germany

Filed Feb. 8, 1973, Ser. No. 330,640
Claims priority, application Germany, Feb. 11, 1972, 2206671
Int. Cl. G05g 9/00
U.S. Cl. 74—473 R 12 Claims

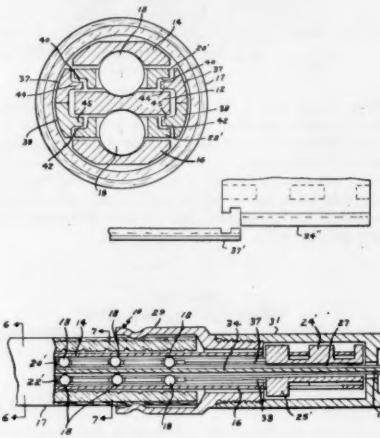


1. In a mechanical switching device for a gear transmission having one or more control levers for shifting of gears and an indexing disk adapted to be moved between a coupled condition and a disengaged condition with respect to said control levers by axial movement thereof and preadjusted in said disengaged condition by a rotation thereof, a movement of said indexing disk when in said coupled condition effecting a simultaneous shifting movement of the control levers, the improvement comprising said control levers being pivotably supported in a plane extending transversely to the direction of said axial movement of said indexing disk, tripping pins are mounted on one of said control levers and said indexing disk and extending in a direction perpendicular to the plane of said indexing disk, means defining centering cones mounted on the other of said control levers and said indexing disk, the opening width of said centering cone means encompassing the entire shifting movement of the respectively associated control levers, said indexing disk having an axial zone of movement sufficient to permit said tripping pins to be adjusted from a position which is completely free of engagement with said centering cone means to a position centered on the associated centering cone means.

3,841,171
SUPPORT FOR FLEXIBLE CONTROL DEVICE

Don L. Young, Jr., Florissant, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,383
Int. Cl. F16c 1/10
U.S. Cl. 74—501 R 4 Claims



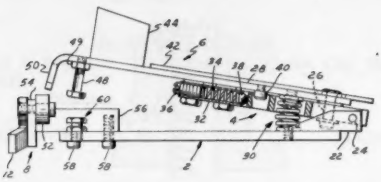
1. In a flexible push-pull device, adapted to transmit a control from a driver at one end to a driven member at the other end, having a flexible housing; a load carrying member within the housing; said load carrying member including means forming a central race, a pair of outer race strips positioned adjacent said load carrying member; anchor members at the ends of the control device for securing said outer race strips within the housing; said anchor members having a channel therebetween for the passage of the load carrying member; a plurality of roller balls positioned on opposite sides of the load carrying member, between the load carrying member and the outer race strips; a ball separator positioned between the load carrying member and each of the outer race strips; wherein movement of the load carrying member within said housing leaves a portion at the ends of the control device unsupported by the balls and outer race strips; a support for the unsupported end portion of the load carrying member: comprising a pair of structural support members attached to each of said anchor members and extending a predetermined distance along the sides of said load carrying member adjacent the ends of the control device; each of said structural support members hav-

ing a projection thereon positioned adjacent the load carrying member between the load carrying member and the outer race strip; said ball separators having cut away portions adapted to receive said support member projections.

3,841,172
FOOT PEDAL VALVE CONTROL FOR EARTH-MOVING EQUIPMENT

John S. Pilch, Ware, Mass., assignor to Ware Machine Works, Inc., Ware, Mass.

Filed Nov. 8, 1973, Ser. No. 414,118
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **11 Claims**



1. Foot pedal mechanism for controlling the movement of an actuating stem member having a reciprocable path of substantially linear travel with a neutral position between the ends of said path, said mechanism comprising,

a pivoted lever member having means mounted thereon for attaching an actuator member radially of the axis of rotation thereof, said lever being normally disposed in a neutral position and rotatable at either side thereof,

a foot pedal member provided with means for limited horizontal shifting movement laterally of each side of a neutral central position thereof, and, when shifted away from said neutral position, having means for movement in a path perpendicular to said lateral motion,

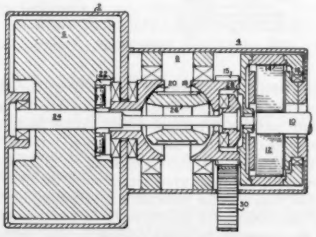
said lever having surfaces engageable by said pedal and located in angularly spaced relation at opposite sides of the pivotal axis of said lever,

said foot pedal having laterally spaced lever engaging portions projecting therefrom and when shifted towards one of said limits of lateral movement carrying a projecting portion into position for engaging a lever surface and imparting rotary tilting movement to the lever by pressing said projecting portion against the lever.

3,841,173
TURBINE DRIVE

Charles Edward Kraus, Austin, Tex., assignor to Excelermatic, Inc., Leesburg, Va.

Filed May 7, 1973, Ser. No. 357,795
Int. Cl. F16h *3/74, 15/08*
U.S. Cl. 74—751 **8 Claims**

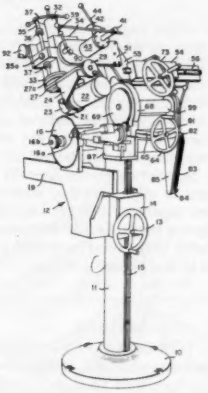


1. A gas turbine drive for driving a rapidly variable load, comprising: a gas turbine engine including a gas turbine and a compressor having a common shaft, said gas turbine engine having an operational speed range between full speed and a lower idle speed; a flywheel coupled to said gas turbine for storage of energy; an infinitely variable speed transmission disposed as a power transmission link between the gas turbine engine and the flywheel for the exchange of energy between said flywheel and the gas turbine engine; control means for changing the transmission ratio of said infinitely variable speed transmission such that the flywheel speed is decreased as the gas turbine engine speed is increased and the flywheel speed is increased as the turbine speed decreases; and means operatively connecting said gas turbine engine to said variable load.

3,841,174
APPARATUS FOR SHARPENING DIFFERENT TYPES OF CIRCULAR SAWS, TOOLS AND OTHER CUTTERS HAVING A WIDE RANGE OF DIAMETERS

James McEwan, 138 Stockton Ave., San Jose, Calif. 95126

Filed Apr. 16, 1973, Ser. No. 351,306
Int. Cl. B23d *63/12*
U.S. Cl. 76—41 **15 Claims**



1. In apparatus for sharpening different types of circular saws, tools and other cutters having a wide range of diameters, the combination comprising a grinder unit including a grinding wheel and means driving said wheel, means positioning a saw with respect to said grinding wheel, means supporting said grinder unit including a substantially vertical post and said means moving said grinding wheel into said saw comprises a rack attached to said post and a gear engaging said rack and a spring loaded lever rotating said gear and moving said post up or down, said supporting means also comprising means tilting said unit with respect to said saw, means traversing said grinding wheel across said saw, and means adjusting said grinding wheel laterally with respect to the direction of traverse and means moving said grinding wheel into said saw.

3,841,175
METHOD AND APPARATUS FOR MODIFYING LOCK KEYS

Alfred Louis Comtois, 4809 Atherton Ave., San Jose, Calif. 95130

Filed June 15, 1973, Ser. No. 370,350
Int. Cl. B21k *13/00;* **B23d** *67/00*
U.S. Cl. 76—110 **5 Claims**

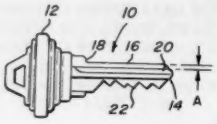
1. Machine apparatus for modifying the barrel of a key such that the key remains functionally operable to operate an intended lock but is not compatible for making subsequent duplicate keys capable of operating the same lock, the apparatus comprising, in combination:

a base support member;

a cutting tool having a cutting edge, said tool being supported over the base member;

drive means engaged to the cutting tool for driving the cutting tool with the cutting edge driven along a cutting path within a cutting plane;

securing means for engaging and securing a key to be modified with the reference planar surface of the barrel facing the cutting path of the cutting tool, said securing means being movable relative to the cutting path along a first lateral path which first lateral path intersects with the plane of the cutting path of the cutting tool such that as the securing means traverses along the first lateral path, the reference planar surface of the barrel intersects the cutting plane;



first guide track means engaged to said securing means for guiding said securing means along the first lateral path;

second guide track means supported over the base member for guiding said securing means laterally relative to the cutting path of the cutting tool and laterally relative to the first lateral path to control the depth of cut of the cutting tool in the barrel of the secured key as said securing means traverses along the first lateral path; and

a key alignment member supported laterally relative to said securing means to align said key within said securing means, the key alignment member including a reference surface for aligning the horizontal reference plane surface of the key relative to the securing means prior to said key being secured in said securing means.

3,841,176

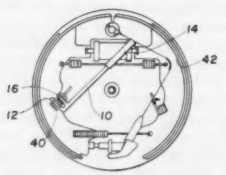
HAND TOOL FOR INSTALLING BRAKE SHOES

Adron Murphy, Farmington, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 14, 1973, Ser. No. 397,332

Int. Cl. B25b

U.S. Cl. 81—3 R **2 Claims**



1. A hand tool used in installing brake shoes by hooking a retaining pin over a hold down spring placed in a brake shoe and then depressing the retaining pin end of the spring for hook up of the retaining pin while holding the shoe firmly against the backing plate, said tool comprising:

an elongated shaft having one end bent at right angles to the body of the shaft and having a handle grip at the other end, said shaft having a uniform circular cross section with a first diameter, said one shaft end engaging the coil of said spring when the tool is in use; and

a rod having a uniform circular cross section with a second and smaller diameter, the rod being parallel to the bent end and secured at one end to the shaft at a position adjacent but spaced from the bent end, the rod extending in the same direction as the bent end and being of like length, the rod, shaft and bent end being coplanar, the rod depressing the retaining pin end of the spring when the tool is in use.

3,841,177

TORQUE-LIMITING GRIPPING DEVICE FOR A SCREW MEANS

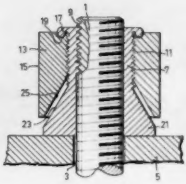
Paul Gunnar Watterback, Stockholm, Sweden, assignor to Arbman Development AB, Stockholm, Sweden

Filed Apr. 17, 1973, Ser. No. 352,032

Claims priority, application Sweden, Aug. 21, 1972, 8938/72

Int. Cl. B25b

U.S. Cl. 81—52.4 R **10 Claims**



1. A torque-limiting gripping device for a screw or the like comprising: a screw means having an inner working thread and an outer thread, a gripping body having a thread which engages the outer thread and also having external gripping surfaces for receiving a tightening tool, a stop disposed on the screw means against which the gripping body engages with a predetermined pre-stress in the direction opposite to the direction for tightening the screw means so that when the screw means is tightened onto a screw by means of a tool engaging the gripping surfaces, torque is transferred from the gripping body to the screw means until the torque applied by the tool overcomes the pre-stress between the gripping body and the stop, whereafter the gripping body may be run down on the outer thread without transferring torque.

3,841,178

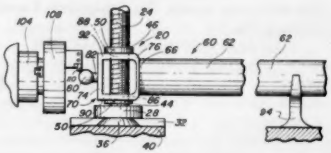
FIXTURE AND METHOD FOR REPAIRING A WORN BALL ON THE YOKE OF A UNIVERSAL JOINT ASSEMBLY

Don \. Horwitz, Skokie, Ill., assignor to Wesco Products Compa..y, Chicago, Ill.

Filed July 9, 1973, Ser. No. 377,788

Int. Cl. B23b *5/00*

U.S. Cl. 82—34 R **5 Claims**



1. A lathe fixture for supporting and securing the yoke of a universal joint of the type including a ball joined to and projecting axially endwise of the yoke, said fixture being adapted for presenting the ball to a tool operable to cut the ball for reshaping thereof, said fixture comprising, in combination,

a base adapted for supported securement on the bed of a lathe-like machine for selectable positioning of the yoke of the universal joint transversely of and longitudinally along the machine in paths normal to and paralleling a way-like carriage thereof,

a shaft carried by and extending upwardly of said base and normally of the carriage of the machine, said shaft being

sized to pass through a pair of opposed openings formed in upper and lower walls of the yoke of the universal joint and to limit shifting thereof in horizontal planes,

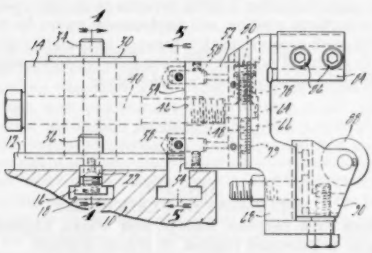
yoke locking means carried by said shaft and shiftable axially thereon to abut the yoke at upper and lower walls thereof and to support the yoke at selectable axial positions on said shaft and to preclude vertical displacement of said yoke,

whereby a cutting tool carried by a rotatable head of the machine is presentable to the ball to remove stock therefrom to convert the ball to a stub shaft generally cylindrical in form and coaxial with an axial centerline of the yoke.

3,841,179
SHAVE TOOL HOLDER

Robert S. Brown, II, 224 S. Main St., Marine City, Mich. 48039

Filed Aug. 17, 1973, Ser. No. 389,180
Int. Cl. B23b *29/00*
U.S. Cl. 82—35 **10 Claims**



1. A tool holder for machining a rotationally driven workpiece including a base, a way member mounted on the forward end of said base, a floating head slidably carried by said way member, means on said head for supporting a cutter, pivot means connecting said base and said way member, a pair of projections on the rear of said way member, a pair of recesses at the front end of said base receiving said projections in a manner permitting limited pivotal adjustment of said way member on said base, and screw means carried by said base adjustably engaging said projections to control pivotal movement of said way member about said pivot means.

3,841,180
DIVIDING ROLLED LENGTHS OF STOCK INTO MERCHANT LENGTHS

Franz Gutlbauer, Essen; Meinert Meyer, Dusseldorf, and Claus-Georg Schlanzke, Ratingen-Tiefenbroich, all of Germany, assignors to Schloemann Aktiengesellschaft, Steinstrasse, Germany

Filed Oct. 1, 1973, Ser. No. 402,015
Claims priority, application Germany, Sept. 30, 1972, 2248177
Int. Cl. B23d *25/12, 31/00*
U.S. Cl. 83—15 **4 Claims**

1. A method of dividing rolled lengths of stock into merchant lengths, comprising:

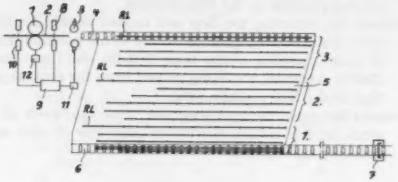
dividing each said rolled length of stock into a number of multiple lengths;

cooling said multiple lengths in a cooling bed;

collecting into batches said multiple lengths from a number of said rolled lengths of stock; and

dividing said batches into said merchant lengths and at least one discard length;

at least the last one of said multiple lengths being equal to an integral multiple of said merchant length plus a discard length and the remainder of said multiple lengths being equal to an integral multiple of said merchant length, said multiple length which includes said discard length being longer by said discard length than the longest integral

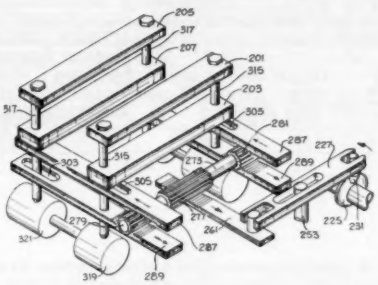


multiple length in the respective said batch, and all said multiple lengths being respectively not greater than or less than the maximum or minimum length permitted by said cooling bed.

3,841,181
PRESS WITH MULTIPLE SHUTTLE FEED

Paul Vinson, 7821 N. 65th St., Scottsdale, Ariz. 85253

Filed Nov. 29, 1972, Ser. No. 310,634
Int. Cl. B26f *1/02*
U.S. Cl. 83—50 **32 Claims**



1. A press for performing work operations on stock comprising:

first and second shuttle members on opposite sides of the stock;

means for moving the first and second shuttle members into clamping relationship with the stock;

means for advancing said first and second shuttle members from an initial position to an advanced position with the first and second shuttle members being in clamping relationship with the stock to provide a first stock indexing movement;

third and fourth shuttle members on opposite sides of the stock;

means for holding the third and fourth shuttle members out of clamping relationship with the stock at least when the first and second shuttle members are being advanced from the initial position to the advanced position;

means for moving the third and fourth shuttle members from a first position to a second position during at least a portion of the time that the first and second members are being advanced;

means for moving the third and fourth shuttle members into clamping relationship with the stock when the third and fourth clamping members are at said second position;

means for moving the third and fourth shuttle members from the second position to the first position with the

third and fourth shuttle members being in clamping relationship with the stock to thereby provide a second stock indexing movement;

means for holding the first and second shuttle members out of clamping relationship with the stock at least when the third and fourth shuttle members are moving from the second position to the first position;

means for returning the first and second shuttle members from the advanced position to the initial position during at least a portion of the time that the third and fourth shuttle members are being moved from the second position to the first position; and

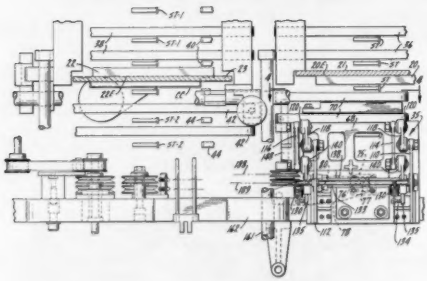
means for performing at least one work operation on the stock at the termination of at least one of said stock indexing movements.

3,841,182

BOOK TRIMMING MACHINE

James F. Cosgrove, Western Springs, and William E. Soong, Westmont, both of Ill., assignors to McCain Mfg. Corporation, Chicago, Ill.

Filed July 30, 1973, Ser. No. 383,881
Int. Cl. B26d *7/06*
U.S. Cl. 83—89 **6 Claims**



1. A cyclically operable book trimming machine for severing two books joined head to foot by a medially located separation margin and comprising: first and second knives at respective first and second knife stations, said first knife making a cut along one line of the separation margin to sever the books, said second knife severing the separation margin as waste paper, means to collect the waste paper, means to feed the joined books along a predetermined path to the first knife, means to feed one of the severed books out of the first knife station along a path co-lineal with said predetermined path, a reciprocal book transport for clamping the other book and feeding it out of the first knife station along a path divergent from the first-named path, and cyclically operable means for reciprocating the book transport into and out of the first knife station during repeated cycles of the machine repeatedly to clamp and feed books severed by the first knife.

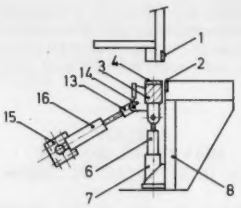
3,841,183

SHEARING MACHINE

Josias Van Zyl, Northcliff, South Africa, assignor to Intermenua (Proprietary) Limited, Johannesburg, South Africa

Filed July 31, 1972, Ser. No. 276,740
Int. Cl. B26d *7/06*
U.S. Cl. 83—157 **3 Claims**

1. A shearing machine comprising a fixed blade, a movable blade movable over the fixed blade to set up a shearing action along the shearing edges, a work support member located in a rest position adjacent to and along substantially the length of the shearing edge of the fixed blade in the path of the movable blade and yieldably supported against downward displacement by the movable blade during a shearing stroke, mounting means attaching the work support member to a



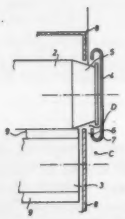
frame of the machine, the mounting means permitting the work support member to swing between an operative position and a discharge position, and displacement means for swinging the work support member between its operative position and its discharge position while the work support member is not urged downward by the movable blade.

3,841,184

TREATMENT OF GLASS FIBRES

Kenneth Cyril Thatcher, Billinge, near Wigan, England, assignor to Fibreglass Limited, St. Helens, England

Filed Nov. 20, 1972, Ser. No. 307,934
Claims priority, application Great Britain, Nov. 30, 1971, 55520/71
Int. Cl. B23d *25/12;* **B26d** *5/08*
U.S. Cl. 83—346 **4 Claims**

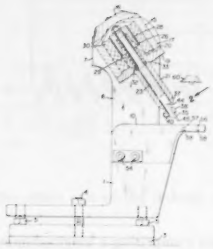


1. A strand chopping apparatus comprising a backing roll and a cutter roll with projecting blades associated with the backing roll so that strands introduced between the backing roll and the cutter roll are into predetermined lengths characterized in this, that the backing roll is provided with a frusto-conical end portion positioned to project through an aperture in a guard box forming part of a guard assembly which also includes a substantially circular guard plate, a slot being provided between the guard plate and the guard box through which in operation strands are moved sideways into contact with the frusto-conical end portion of the backing roll which guides the strands into a position in which they are nipped between a cutting blade and the backing roll and are chopped into predetermined lengths.

3,841,185
ELECTROMAGNETIC CUTTING APPARATUS PARTICULARLY FOR USE, ETC.

Miroslav Baran, Batawa, Ontario, Canada, assignor to Bata Shoe Co., Inc., Belcamp, Md.

Filed Dec. 22, 1972, Ser. No. 319,923
Claims priority, application Canada, Dec. 24, 1971, 131142
Int. Cl. B26d *5/32, 5/34*
U.S. Cl. 83—364 **5 Claims**



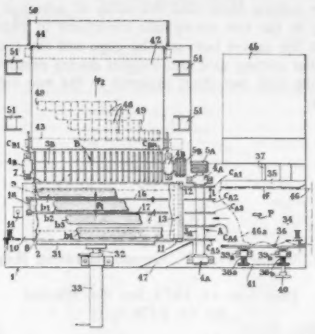
1. A cutting apparatus for cutting a strip of binding tape connected to a shoe upper component and extending beyond at least one edge thereof, the cutting being performed at said one edge, said apparatus comprising a frame; a yoke on said frame; an arm slidably mounted in said yoke; a table portion on said frame for receiving said component and tape; a casing on one end of said arm opposite said yoke and above said table portion of the frame; plunger means housed in said casing and projecting therefrom toward said table portion of the frame; blade means on the outer end of said plunger for cutting said tape during passage of the component and tape over said table portion of the frame; electromagnetic drive means for moving said plunger and blade means from a rest position to a cutting position; sensor means for actuating said drive means when said component and said tape are properly located beneath said blade means; and means for returning said plunger means and said blade means to said rest position, said electromagnetic drive means including a core formed of magnetic material mounted on said plunger means in said casing; a coil around said core; and circuit means for energizing said coil in response to signals from said sensor means, said sensor means including photoelectric cells positioned in the path of travel of said component in advance of said blade means, and a light source for illuminating said photoelectric cells.

3,841,186
MACHINE FOR CUTTING MEAT JOINTS, SPECIALLY BREASTS OF PORK

Francois Demerin, Paris, France, assignor to Fabriques De Produits Alimentaires Les Fils De William Saurin, Lagny, France

Filed May 31, 1973, Ser. No. 365,586
Claims priority, application France, June 2, 1972, 72.19953
Int. Cl. B26d *7/06*
U.S. Cl. 83—404.2 **16 Claims**

1. Machine for cutting a joint of meat of substantially elongated configuration, having a first, relatively thick end and a second, relatively thin end, into a plurality of pieces of substantially equal weight, comprising: a substantially rectangular table, a first row of substantially equally spaced parallel cutters on a first side of said table, through which said second end of said joint of meat is fed for cutting the same into strips having substantially the same width, a plate mounted to said table in an inclined position and sloping downwardly in a direction away from said first side of said table for stopping the cut strips of meat on said table in respective positions depending on the thickness of the respective second ends of said meat strips, a second row of cutters disposed on a second side of said table which is adjacent to said first side, and means for pushing the strips of meat stopped by said plate towards said second row of cutters, the cutters of said second row of

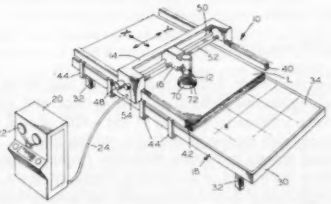


cutters being spaced unequally, with the spaces between cutters being determined mathematically so as to cut said strips into pieces of meat having different lengths but substantially the same volume and weight.

3,841,187
METHOD AND APPARATUS FOR HOLDING SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,554
Int. Cl. D06h *7/00;* **B26d** *1/10*
U.S. Cl. 83—451 **5 Claims**



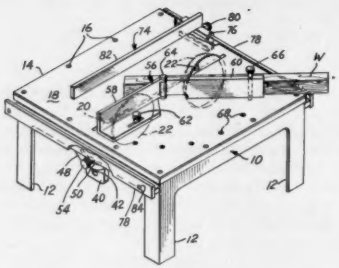
1. Apparatus for cutting sheet material comprising: support means defining a work surface on which sheet material is positioned during a cutting operation; a cutting tool suspended above the work surface and having a sharp cutting edge; movable carriage means connected to the tool and the support means for moving the cutting tool and the sheet material positioned on the work surface relative to one another back and forth in two coordinate directions parallel to the work surface and with the cutting edge engaging the material; control means connected to the movable carriage means for controlling the relative movement of the cutting tool and the support means to advance the cutting edge of the tool relative to the material along a desired line of cut; holding means positioned adjacent the cutting tool for applying pressure to the sheet material to cause the sheet material to be pressed against the work surface, the holding means including a cage suspended with the cutting tool above the work surface and

circumscribing the tool and a plurality of spherical weights held in the cage in a closely packed planar array extending in both of the two coordinate directions and at each side of the cutting tool; and a sheath also suspended above the work surface within the periphery of the cage and interposed between the cutting blade and the array of spherical weights extending in the two coordinate directions to capture the weights in the region between the cage and the sheath and separate the cutting tool and weights during relative movement of the tool and sheet material in the two coordinate directions.

3,841,188
BENCH SAW

Joseph R. Wiater, 4933 N. Oconto, Harwood Heights, Ill. 60656

Filed Apr. 11, 1973, Ser. No. 350,060
Int. Cl. B27b *5/18*
U.S. Cl. 83—471.3 **6 Claims**

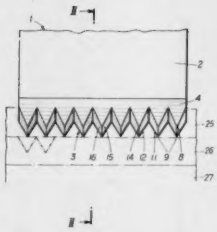


1. A table saw comprising:
frame means,
a planar rigid table surface mounted on said frame means, an elongate slot defined in said surface and extending across a substantial portion of the width of said surface, powered saw means including a cutting blade,
mounting means mounting said saw means beneath said surface such that said cutting blade projects upward through said slot and above said surface, said mounting means including a pair of elongate spaced rods extending parallel to said slot beneath said surface, said saw means being longitudinally movable along said rods and the length of said slot relative to the work to be cut, a pair of first and second plate means each having complementary interfitting arcuate ridges and grooves in adjacent facing surfaces thereof, said first plate means of each said pair being stationarily mounted to said frame means adjacent opposite ends of said slot, said second plate means of each said pair being mounted to said first plate means by said interfitting arcuate ridges and grooves and supporting said elongate rods thereon, one of said ridges and grooves being selectively movable relative to the other to selectively vary the angle at which said cutting blade projects through said slot about an axis parallel to said slot, and
work holder means stationarily mounted to said surface for positioning the work to be cut in the path of movement of said cutting blade as said blade is moved along said slot.

3,841,189
CUTTING DIE AND PROCESS

Ernst Maximilian Spengler, Heusenstamm, and Rolf Karl Stursberg, Haan, both of Germany, assignors to Martin Miller Gesellschaft m.b.H., Vienna, Austria

Filed Jan. 10, 1972, Ser. No. 216,464
Int. Cl. B26f *1/44*
U.S. Cl. 83—660 **3 Claims**



1. A cutting die comprising a longitudinally extending strip steel die blade having a pair of longitudinally extending planar first sides with approximately parallel surfaces and a longitudinally extending second side relatively narrow compared to said first sides and extending along one longitudinal edge of the parallel side surfaces of said first sides, said second side forming a cutting edge spaced between the extension of the planes of said first sides and comprising a plurality of sawteeth with each sawtooth having a pointed tip and a pair of first edge portions extending in generally the direction of said first sides and diverging from said pointed tip with each said first edge portion being rectilinear and each said pair of edge portions forming a V-shaped configuration, each said sawtooth having at least one second edge portion extending transversely of said cutting edge and tapering rectilinearly outwardly from said pointed tip toward one of said first sides, each said sawtooth is pyramidally shaped and has planar sides extending from said pointed tip and said first edge portion and toward the parallel side surfaces of said die blade, said planar sides being spaced wholly inwardly of the extension of the planes of said first sides, each of said first sides having a continuous planar chamfered surface extending from the approximately parallel first side surface and tapering inwardly toward the other first side surface to said planar sides of said sawteeth, and the included angle between said second edge portion and the extension of the plane of said first side on the same side of said die with said second edge portions is greater than the included angles between said chamfered surface and the plane of said first side on the same side of said die blade as said second edge portions.

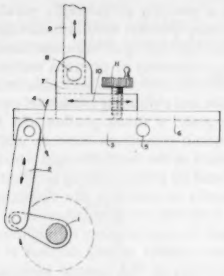
3,841,190
APPARATUS FOR AN INFINITE CHANGE OF THE VERTICAL MOVEMENT OF THE SPECIMEN IN MICROTOMES AND ULTRAMICROTOMES

Hellmuth Sitte, Homburg/Saar, Germany, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Nov. 10, 1972, Ser. No. 305,618
Int. Cl. B26d *1/02, 7/06*
U.S. Cl. 83—703 **4 Claims**

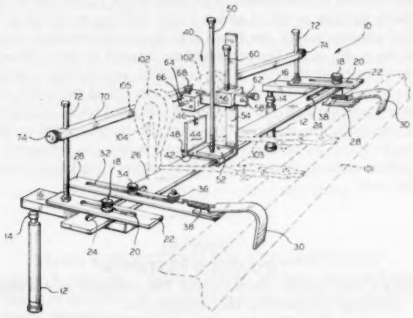
1. Apparatus for use in a microtome comprising an elongated rocker member adapted to pivot about an axis, means connected to said drive shaft and adapted to move said rocker member with an alternate motion, an adjustable carriage carried on said rocker member, a linkage assembly pivotably connected to said carriage, said carriage being fixably positionable along said rocker member to regulate the distance

traversed by the linkage assembly during the cutting stroke, so that the amount of alternate motion of a specimen holder



connected to the other end of the linkage assembly may be adjusted.

3,841,191
APPARATUS FOR INSTALLING HAMMERS IN MUSICAL INSTRUMENT
Anthony Jaras, 3800 18th Ave., Kenosha, Wis. 53140
Filed Apr. 23, 1974, Ser. No. 463,404
Int. Cl. G10g *1/00*
U.S. Cl. 84—453 **8 Claims**



1. An apparatus for installing string-striking hammers in a musical instrument, such as piano or the like, comprising:

a. an adjustable support member;

b. a first movable bar connected to said support member and having means for releasable attachment to a portion of the musical instrument;

c. a second movable bar connected to said first bar by connecting means;

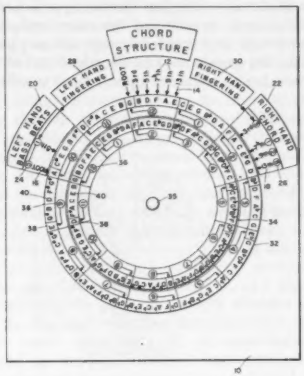
d. said first and second bars being movable with respect to one another;

e. a guide element slidably mounted on said first bar and having:

i. a plate for contacting the hammer being installed to provide a guide for placing said hammer in position to strike a predetermined point on the string of the musical instrument;

ii. a pin for contacting said hammer and providing a guide for locating said hammer in position to strike said string with a predetermined portion of said hammer.

3,841,192
CHORD TRANSPOSING AND FINGERING DIAL
Verna M. Leonard, 8701 Hwy. 41, Fresno, Calif.
Filed Feb. 22, 1974, Ser. No. 444,894
Int. Cl. G10b *15/00*
U.S. Cl. 84—485 **5 Claims**



1. Means for instant determination of polychords in different keys and the normal breakdown into left hand and right hand fingering of the polychords in any one key as well as corresponding simultaneous determination and breakdown of similar chords in other keys, said means comprising:

a panel having a smaller dial and a larger dial coaxially mounted thereon for relative rotation, with the smaller dial outermost so that peripheral portions of the larger dial are visible;

said dials having the peripheral portions thereof divided into sectors, said sectors indicating separate tone name arrays for polychords and chords in different keys;

said panel having a scale degree array visible beyond the said tone name arrays and readable in conjunction with any one of said tone name arrays on one of said dials;

a left-hand fingering indicator and partial scale degree array and a right-hand fingering indicator and partial scale degree array, all on said panel and visible beyond said dials;

whereby adjustment of one of said dials to dispose the tone names for a particular key in juxtaposition with the first-mentioned scale degree array indicates the tone name — scale degree relationship for that particular key, and whereby selective adjustment of both of said dials with substantial juxtaposition with said partial scale degree arrays indicates the fingering breakdown for corresponding polychords in the same or other keys.

3,841,193
FASTENING DEVICE
Akira Ito, Yokohama, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan
Filed June 2, 1972, Ser. No. 259,041
Int. Cl. F16b *35/06*
U.S. Cl. 85—9 R **4 Claims**

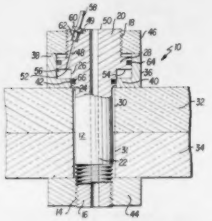
1. A fastening device comprising:

an elongated cylindrical bolt having first and second portions of different diameters and having a circular flange integrally formed therewith and extending radially outward near one end of the bolt but spaced therefrom to define said second diameter portion, said bolt being capable of insertion through two components to be fastened together;

first external thread means disposed upon said one end of said elongated bolt adjacent said circular flange;

a first securement nut for threaded engagement with said first external thread means;

an annular shoulder member having a flat edge at one end, an inner diameter substantially equal to the diameter of said circular flange and a radially inwardly extending end face at its other end which is parallel to said flat edge, said end face having a central opening of substantially the same diameter as said first diameter portion of said bolt, whereby upon insertion of the other end of said bolt therethrough, said first securement nut may be tightened to forceably engage the one flat edged end of said shoulder member to cause the opposite and parallel end face



thereof to be secured against one of the said components being fastened together;

annular fluid chamber means being defined by said first diameter portion and one annular face of said circular flange of said elongated bolt and by said shoulder member;

fluid passageway means located internally of said bolt at said one end thereof and connected to an external source of fluid and being in communication with said fluid chamber means for conducting fluid from said source into said fluid chamber;

second external thread means disposed upon the other end of said elongated bolt; and

a second securement nut for threaded engagement with said second external thread means.

3,841,194

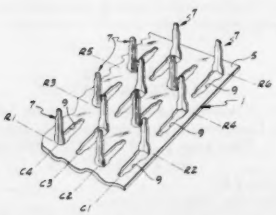
CONNECTOR PLATE

Walter G. Moehlenpah, 9906 Old Warson Rd., St. Louis, Mo. 63124

Filed Jan. 8, 1973, Ser. No. 321,631

Int. Cl. F16b *15/00*

U.S. Cl. 85—13 **1 Claim**



1. A connector for securing together adjacent wood structural members comprising a plate of mild commercial steel having a thickness ranging between about **0.035** and **0.045** inches and having a plurality of elongate integral teeth extending generally perpendicularly from one face thereof, each of said teeth being constituted by a struck-out portion of the plate vacating an elongate slot in the plate with each said tooth projecting from one face of the plate at one end of its respective slot in the plate, said plate having between five and six teeth per square inch of plate area, said teeth being arrayed on the plate in a plurality of generally parallel transverse rows and in generally parallel longitudinal columns, the teeth in each adjacent row facing in opposite directions, each of said teeth having a plurality of portions including a base portion joined at one end thereof to said plate at said one end of its respective slot and extending therefrom generally perpendicularly of the plate, a shank portion and a tip portion, with generally smooth transitions between said portions to facilitate penetration of the teeth into said wood members, the side of said base and tip portions being substantially parallel to one another thereby to enhance the resistance of the teeth to withdrawal from the wood member, each tooth being generally V-shaped in cross section throughout its length with its sides disposed relative to one another at an angel of about 120° and meeting at the central longitudinal plane of the tooth, each tooth having a ratio of I/L^2A equal to about 1/1000 where I is the moment of inertia of the shank portion of the tooth about an axis parallel to said plate extending from one side of the tooth to the other, L is the length of the tooth, and A is the cross-sectional area of the shank portion of the tooth, each tooth further having a ratio of its length to its thickness squared equal to or greater than about 280, a ratio of the length of the tip portion of each tooth to the width of its shank portion equal to about 3/2 thereby to facilitate entry of the tip portion into the wood member so as substantially to fix the tip portion relative to the wood member and thus increase the resistance of each tooth to buckling as the shank and the base portions thereof penetrate the wood member, a ratio of the width of the tip portion of each tooth to the length of its tip portion equal to about 1/2 thereby to further facilitate penetration of the tooth tip portion into said wood member, a ratio of the thickness of each tooth to the width of its shank portion equal to about 11/25 thereby to facilitate further penetration of the tooth into the wood member, a ratio of the width of the tip portion of each tooth to the width of its shank portion equal to about 147/200, and having a ratio of the width of the base portion of each tooth to the width of its shank portion equal to about 173/100, said ratios resulting in the tooth having sufficient resistance to buckling and to bending over, so as to enable the tooth readily to penetrate the densest commercially used lumber without buckling or bending over.

3,841,195

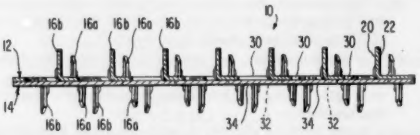
TWO-SIDED FASTENER

John Calvin Jureit, Coral Gables, Fla., assignor to Automated Building Components Inc., Miami, Fla.

Filed May 15, 1973, Ser. No. 360,600

Int. Cl. A43b *23/20;* **F16b** *15/00*

U.S. Cl. 85—13 **13 Claims**



1. A hidden fastener comprising:

two metallic plates, each of said plates having rows of teeth struck therefrom and depending outwardly from the plate, said teeth being at longitudinally spaced positions along the plate with slots left by the striking of said teeth extending away from the base of said teeth, said plates

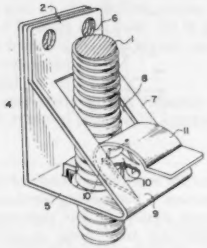
being bonded together in back-to-back relation with teeth extending from said plates in opposite directions.

3,841,196

QUICK-ACTING CLAMP

George August Tinnerman, 3600 Stewart Ave., Miami, Fla. 33133

Filed Oct. 31, 1972, Ser. No. 302,599
Int. Cl. F16b *37/04*
U.S. Cl. 85—36 R **7 Claims**



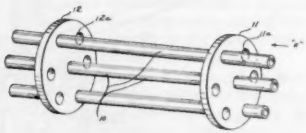
1. A one-piece, sheet metal quick-acting, rod-engaging clamp comprising a sheet metal member having a supporting element, a substantially horizontal plate element extending from said supporting element and having an aperture therein, and a lever element bent at an angle on one side of said plate element upwardly and toward said opening, said lever element having a tooth struck out from said lever and inclined upwardly and extending over the edge of said aperture to engage a rod in said aperture, said lever element extending beyond said tooth to form a lever arm and being movable away from said opening to withdraw said tooth from engagement with said rod, the opposite side of said aperture being formed with an inwardly directed edge to engage a rod in said aperture, the width of said aperture between said inwardly directed edge and the side adjacent said tooth being greater than the diameter of the rod, so that when said tooth is withdrawn by movement of said lever, the rod may be disengaged from the edge of said aperture and moved relative to said clamp.

3,841,197

FOAM STRUCTURED ROCKET DISPENSER

Edward J. Morrisey, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,621
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.816 **2 Claims**



1. A rocket launcher tube-pod structure including a plurality of separate rocket tubes disposed in a predetermined cluster configuration; a pair of relatively lightweight, substantially non-loadsupporting and initially unsupported, oppositely-disposed, and rigid rube-support and disc-shaped spacer elements, each incorporating a plurality of regularly-spaced and transversely-extending openings in respective alignment with each other and receiving therethrough in partially supporting relation only the opposite end portions of, and thereby providing limited dualend support for initially and only temporarily positioning the said plurality of rocket tubes in preparation for their subsequent and permanent disposition in the said predetermined cluster configuration; a relatively thick, relatively lightweight, load-supporting, single, unitary and semi-rigid, combined, main tube-and-pod structure-and-insulative support therefor entirely composed of an insulating foam material and disposed as a combined supporting and foam insulating means completely around and thus reinforcing the partial support being initially given to the said tubes by said spacer elements, and further completely enclosing and entirely surrounding each of said plurality of rocket tubes and the spaces normally existing therebetween along the entire length thereof to thereby provide a main foam material-tube-support and pod structure ensuring both the protection of the said plurality of rocket tubes from the formation of local stress points therewithin by providing for the optimum load distribution throughout the entire pod structure, and improved insulation between individual rocket tubes in the event of the premature and/or accidental ignition of a particular rocket; a relatively thin, relatively rigid and separate reinforcing skin cover disposed in circumferential and contacting relation to and around the complete outer periphery of, and thereby both further reinforcing the inherent strength afforded to the pod structure by the said insulating foam material of the said combined, main tube-and-pod structure-and-insulative-support, and the protection thereof from externally-applied damage; and means for bonding said separate reinforcing skin cover to the outer periphery of the said insulating foam material forming the said combined, main tube-and-pod structure-and-insulative-support; said separate reinforcing skin cover comprising multiple layers of high modulus fibers filament wound completely around and throughout the entire length of the combined, main tube-and-pod structure-and-insulative support in separate and alternate layers of hoop and helical windings for ensuring a more uniform load distribution throughout the said pod structure into supporting lug sites provided therefor; the insulating foam material of said combined, main tube-and-pod structure-and-insulative support being disposed in holding and supporting relation along and completely housing the entire length of said plurality of rocket tubes, thus distributing operational loads over the maximum surface area thereof to both eliminate localized stress points and improve the insulation thereof.

3,841,198

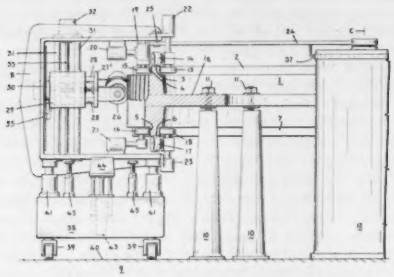
GEAR CUTTING MACHINE WITH MEANS FOR CONTINUOUSLY CONTROLLING THE POSITION OF THE TOOL IN ACCORDANCE WITH THE POSITION OF THE CARRIAGE

Arthur Selwyn Cornford, 561 Bobolink Rd., Clarkson, Ontario, Canada

Continuation-in-part of Ser. No. 202,961, Nov. 29, 1971, abandoned. This application Oct. 2, 1973, Ser. No. 402,793
Int. Cl. B23f *5/20, 5/22, 5/24*
U.S. Cl. 90—4 **10 Claims**

1. A system for cutting gear teeth on a large annular workpiece, comprising a stationary mounting structure defining a vertical axis; means for securing the workpiece on the mounting structure in coaxial relation therewith; a carriage guided for movement along the face of the workpiece to be machined; means for propelling the carriage along the face of the workpiece; a gear cutting tool mounted in the carriage; and means for continuously controlling the position of the tool in relation to the carriage in accordance with the position of the carriage so as to ensure a predetermined path of movement of the tool with respect to the workpiece face, said means for continuously controlling the position of the tool comprising motor means mounted on the carriage and connected to the

tool for moving the tool in relation to the carriage, position sensing means for sensing the position of the carriage on the



workpiece, and motor control means responsive to said position sensing means for controlling said motor means.

3,841,199

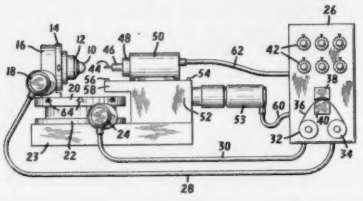
GOLF BALL DIMPLE MILLING APPARATUS

John W. Jepson, Marion, Mass.; Herbert W. Lyon, Escondido, Calif., and Robert A. Brown, Marion, Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Mar. 13, 1973, Ser. No. 340,710

Int. Cl. B23c *1/02, 1/16*

U.S. Cl. 90—13 C **16 Claims**



1. In a machine for producing a plurality of dimples for a golf ball on the surface of a work piece comprising:

a. first means for removing selected portions of material from the work piece;

b. second means for effecting relative movement between the first means and the work piece to establish contact between the two to form a dimple;

c. third means comprising two relatively rotating tables whose axes of rotation intersect, one of said tables being supported on the other of said tables and being radially spaced from the rotary axis thereof;

d. work support means at least partially located between the point of intersection of the axes of rotation of the rotary tables and said one of said tables and mounted on said last mentioned table and being capable of supporting a work piece having a spherical surface which is equally spaced from said point of intersection;

e. said first means having a longitudinal axis intersecting said point of intersection;

f. wherein said third means can adjust the relationship between the first means and the work piece so that in forming each of said dimples the relative movement of the first means and the work piece will be along a line substantially normal with respect to a spherical surface formed on the work piece; and

g. automatic control means for controlling at least said third means.

3,841,200

PRODUCTION OF BODIES OF REVOLUTION

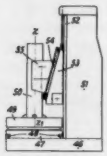
Charles William Berthiez, 5 Ave. Eglantine, Lausanne, France

Division of Ser. No. 50,422, June 29, 1970, Pat. No. 3,741,070. This application Jan. 26, 1973, Ser. No. 327,135

Claims priority, application France, June 30, 1969, 69.22059; Oct. 9, 1969, 69.34620

Int. Cl. B23c *1/12, 1/14*

U.S. Cl. 90—15 R **2 Claims**



1. A machine for machining a body of revolution comprising in combination a bed having horizontal slide means, a carriage mounted to slide on said slide means, a lathe plate, means mounting said lathe plate on said carriage spindle rotation on a vertical axis during the time of machining said body of revolution, a stationary upright mounted on said bed, said stationary upright having vertical slide means on its front face, a main carriage slidably mounted on said vertical slide means, spindle means, a milling tool carried by said spindle means, and means for mounting said spindle means on said main carriage for displacement relative to said main carriage in a plane inclined to said vertical axis, said means for mounting said spindle means on said main carriage comprising inclined slides on said carriage for slidably receiving said pindle means.

3,841,201

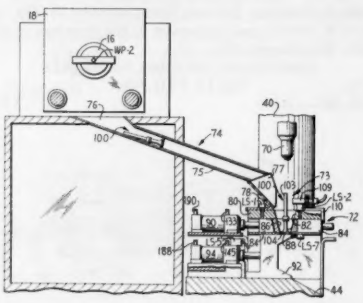
METHOD AND APPARATUS FOR FLASH REMOVAL FROM HEAT AND PRESSURE WELDED ARTICLES

Jozef Kiwalle, Peoria; Paul H. Merritt, East Peoria, and Edward J. Sluetz, Peoria, all of Ill., assignors to Production Technology Inc., Peoria, Ill.

Division of Ser. No. 323,342, Jan. 15, 1973, which is a division of Ser. No. 110,558, Jan. 28, 1971, Pat. No. 3,725,997. This application Sept. 20, 1973, Ser. No. 399,104

Int. Cl. B23d *1/00*

U.S. Cl. 90—24 C **5 Claims**



1. In a flash removal mechanism for removal of radially extending flash from heat and pressure welded articles;

an elongated frame,

a flash removing tool supported on said frame for engagement with the radially extending flash,

said flash removing tool comprising at least one shear die having surfaces thereon for substantially encircling said welded article at a point between said flash and a first end of said welded article,

a support means for positioning the welded article relative to said flash removing tool, and

means associated with said frame for imparting relative movement between the welded article and said flash removing tool for removal of the flash due to said engagement therebetween, said means for imparting relative movement comprising a press, and

means for actuating said press into force exerting contact with a second end of said welded article whereby the article is pushed through said shear die in a direction to shear the flash from the welded article, said means for actuating the press including

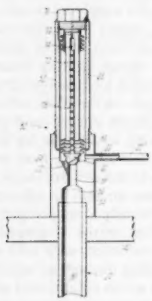
a power means, and

a sensing means responsive to the presence of a welded article in a flash removal position to actuate said press.

3,841,202
CONTROL VALVE AND METHOD

Malcolm D. Groves, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 20, 1972, Ser. No. 236,462
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—471 **5 Claims**



1. A method of controlling the position of a hydraulic actuator, said actuator including a movable piston, a pressure which biases the actuator piston for movement in a first direction being normally applied to a first side of the piston, said method comprising the steps of:

applying a first pressure which opposes said bias pressure to a normally closed pressure responsive control valve, said first pressure causing opening of the control valve;

terminating application of the first pressure;

applying a second pressure which aids said bias pressure to the second side of the actuator piston via the open control valve, the second pressure cooperating with the bias pressure to provide a pressure differential across the actuator piston of sufficient magnitude to induce movement of the actuator piston, the second pressure permitting closing of the control valve;

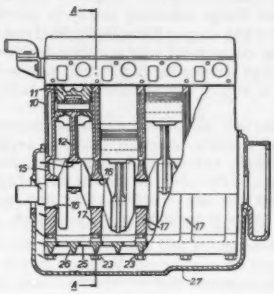
imparting a delay to the closing of the control valve after termination of application of the first pressure thereto; and

maintaining a holding flow for the actuator piston by application of the second pressure thereto via a restricted flow path after closing of the control valve.

3,841,203
RECIPROCATING-PISTON ENGINES AND COMPRESSORS

Glenister Stuart Bruce, Brighton, England, assignor to Ricardo & Co., Engineers (1927) Limited, Sussex, England

Filed May 2, 1972, Ser. No. 249,730
Claims priority, application Great Britain, May 4, 1971, 13021/71
Int. Cl. F01b *1/02*
U.S. Cl. 92—73 **9 Claims**

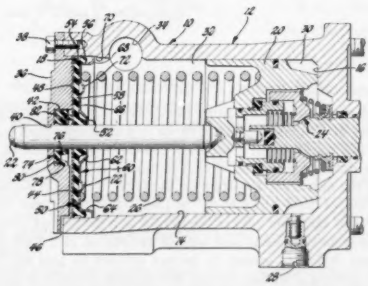


1. A multi-cylinder reciprocating piston machine including a crankshaft supported in a crankcase of the open bottom type by means of main bearings having detachable bearing caps, said open bottom crankcase being closed below by means of a sump, said crankshaft having cranks coupled by means of connecting rods to a set of recriprocating pistons sliding in cylinders and being removably mounted in said crankcase through the open bottom thereof by removing said sump and said detachable bearing caps, said machine comprising a rigid, stiffening beam means for attentuating the vibrational noise generated during the operation of said machine, said beam means being located in the space defined by the crankcase and the sump and rigidly interconnecting said bearing caps of the main bearings secured to the bearing caps and extending along the crankshaft in the crankcase.

3,841,204
COMBINATION END COVER SEAL ARRANGEMENT

Ronald W. Bennett, and James R. Baber, both of Miamisburg, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 27, 1973, Ser. No. 383,399
Int. Cl. F01b *31/18;* **F16j** *15/18*
U.S. Cl. 92—86 **2 Claims**



1. In a power cylinder having an annular cylinder side wall and an end wall and a power transfer rod reciprocably extending through said end wall, a seal assembly comprising:

a diaphragm seal having a center opening defined by an annular axially extending inner lip having a frusto-conical inner surface in free form, a radially extending disc body operatively engaging said end wall, and an outer peripheral seal lip extending axially from the disc body in the same axial direction as said lip and terminating in an annular rolled edge contacting said cylinder side wall in sealing relation;

and an annular seal expander having inner and outer peripheral flanges and a disc body joining said flanges, said inner flange being frusto-conical and positioned in radially outward spaced juxtaposed relation to said seal inner lip, said outer flange extending axially to provide radially outward acting support force holding said seal rolled edge in sealing engagement with said cylinder side wall, said outer flange terminating in a radially outward extending section in axially spaced relation with said seal rolled edge;

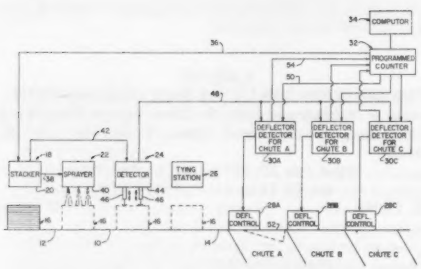
said cylinder side wall having a shoulder thereon adjacent to and of a smaller diameter than said expander outer flange radially outward extending section and normally axially spaced therefrom on the side thereof opposite said seal rolled edge and providing a limit stop against movement of said seal expander in one direction.

3,841,205

ELECTROMECHANICAL DETECTOR SYSTEM AND METHOD FOR CONTROLLING FLOW OF NEWSPAPER BUNDLES

William R. Niehaus, Cincinnati, Ohio, assignor to The E. W. Scripps Company, Cincinnati, Ohio

Filed Apr. 11, 1973, Ser. No. 350,087
Int. Cl. B31b *1/98*; **B65b** *27/08*
U.S. Cl. 93—93 M **17 Claims**



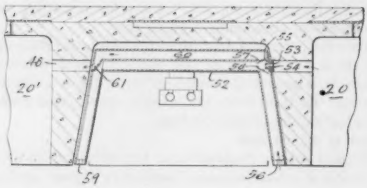
1. A method of controlling the delivery of a predetermined number of articles from a conveyor to a discharge path leading from the conveyor at a location therealong comprising, providing deflection means at said location, moving said articles along the conveyor toward said location, wetting a surface of the first of said number of articles, detecting said wetted surface of said first article, actuating said deflecting means in response to detecting said wetted surface of said first article for said deflector means to deflect articles to said discharge path, wetting a surface of the last of said number of articles, detecting said wetted surface of said last article, and actuating said deflecting means in response to detecting said wetted surface of said last article to terminate the deflection of articles to said discharge path.

3,841,206

MULTIPLE ZONE BUILDING STRUCTURE

Gershon Meckler, Atlanta, Ga., assignor to IS Incorporated Systems Company, New York, N.Y., a part interest

Filed Sept. 12, 1973, Ser. No. 396,397
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 DL **1 Claim**



1. A multiple zone building structure comprising a plurality of concrete beams supported by spaced supported girders, each of said beams having at least one generally vertical web and a substantially horizontal upper surface, whereby the upper surfaces of said beams form a substantially horizontal floor and the lower sides of said beams constitute a ceiling with a plurality of dependent ribs extending in general parallelism the length thereof and forming a plurality of adjacent, inverted generally U-shaped channels, a plurality of lighting fixtures mounted in spaced relationship in alternate ones of the U-shaped channels, duct-completing panels closing the U-shaped channels between those in which lighting fixtures are mounted, means for supplying conditioned air to alternate ones of such ducts, means for withdrawing air from the remaining ones of such ducts, means dividing each of the U-shaped channels in which lighting fixtures are mounted to form at least one heated air chamber therein, there being an opening through which air can flow between each heated air chamber and an adjacent one of such ducts with associated means for withdrawing air, means for withdrawing air from each building zone, for effecting heat transfer from each of said lighting fixtures to the withdrawn air, and for introducing the heated, withdrawn air into an adjacent heated air chamber, a plurality of generally U-shaped mixing tubes, positioned in spaced relationship in the U-shaped channels in which lighting fixtures are mounted, each tube having a conditioned air inlet communicating through an opening with an adjacent one of such ducts to which conditioned air is supplied, a room air inlet, a heated air inlet communicating with a heated air chamber, an air outlet, dampers for the room air inlet and for the heated air inlet, and at least one nozzle operable when air flows through the conditioned air inlet to tend to induce a flow of air into said tube through both the room air inlet and the heated air inlet, and means for controlling said dampers of said mixing tubes to control zone temperature.

3,841,207

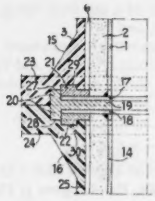
NON-POLLUTING CHIMNEY

Jacques Claude Michel Piot, 171, Rue Join-Lambert, 176 Bois Guillaume, France

Division of Ser. No. 221,620, Jan. 28, 1972, abandoned. This application July 23, 1973, Ser. No. 381,581
Claims priority, application France, Jan. 28, 1971, 71.3842
Int. Cl. E04h *12/28*
U.S. Cl. 98—58 **2 Claims**

1. A non-pollutng chimney comprising a plurality of superposed sections, each section comprising in combination a flue section for the products to be discharged, a covering section of heat-insulating material surrounding the flue section, a casing section of plastic material surrounding the covering section, each casing section having an upper flange adjacent

the upper end of the casing section and a lower flange adjacent the lower end of the casing section for assembling the chimney sections to each other, and means for interconnecting the flanges of adjacent casing sections, in which each flue section has a collar at each end, and adjacent flanges of two adjacent casing sections define recesses which receive the adjacent collars of the corresponding two flue sections.

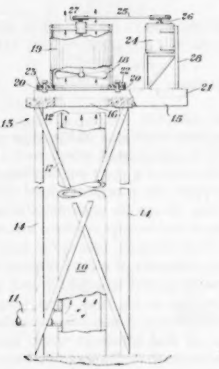


3,841,208

APPARATUS FOR DISPERSING EFFLUENT GAS INTO THE ATMOSPHERE

George P. Knox, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1973, Ser. No. 387,581
Int. Cl. E04h *12/28*
U.S. Cl. 98—58 **3 Claims**



1. Apparatus for dispersing effluent gas into the atmosphere from the outlet of a vertical stack, which includes the combination of:

a support structure generally defined by several upstanding leg members and a platform having an opening therein, in which

the lower end of each leg member is anchored adjacent to the base of the stack, the upper end of each leg member extends above the stack outlet, the platform is fastened to the upper ends of the leg members, such that the platform is positioned above and horizontal to the stack outlet, and the platform opening is aligned with the stack outlet,

a rotatable fan unit which is mounted on the platform above the opening and in alignment therewith, and means enclosing the fan for propelling the effluent vertically upwardly from the stack outlet past the apparatus to thereby disperse the effluent into the atmosphere,

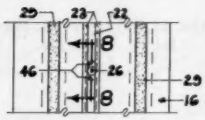
a drive means operatively connected to a fan unit, for rotating the fan.

3,841,209

DIFFUSERS FOR CONDITIONED AIR

Mannie Bertin, 47 Lenion Dr., Danbury, Conn. 06810, and Ira L. Bertin, Box 56, Limington, Maine 04049

Filed July 30, 1973, Ser. No. 384,041
Int. Cl. F24f *13/06*
U.S. Cl. 98—121 A **7 Claims**



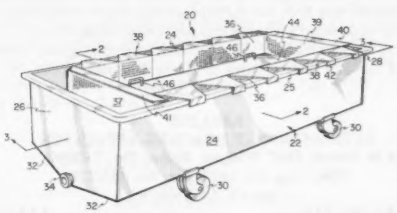
1. A damper-fin unit for an air diffuser, said unit comprising a pair of dampers constituting a first component with each damper the mirror image of the other, a fin constituting a second component, and a pivot, both components including hinge-establishing portions that are interfitting to join the components together and to enable each damper and the fin to be separately pivoted, and with the portions of one component including arcuate, pivot-fitting and confining surfaces, said interfitting portions of the two components so limiting the extent of the pivoting of the dampers and fins that the components may be joined together only by relative movement lengthwise of the axis defined by the pivot confining surfaces.

3,841,210

CHEESE PROCESSING

Larry R. Brog, P.O. Box 176, Afton, Wyo. 83110

Filed Jan. 11, 1973, Ser. No. 322,835
Int. Cl. A23c *19/00*
U.S. Cl. 99—456 **7 Claims**



1. A cheese molding assembly for molding cheese under atmospheric conditions comprising:

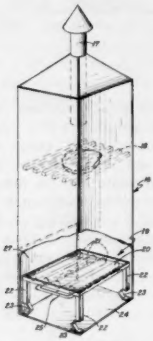
a vat having a closed bottom and upwardly directed sides and a plurality of perforated plates serially arranged in a closed loop around the interior sides of the vat;

a first lower mold form presenting at least one semi-cylindrical surface having a plurality of apertures therein, the mold form being spaced from the bottom of the vat and adapted to nest within the closed loop of perforated plates;

a second mold form presenting at least one semi-cylindrical surface having a plurality of apertures therein and which complements the surface of the first mold form to define a cylindrical mold cavity, the second mold form being free floating above the first so that the vat may be moved from place to place during the molding process, the sec-

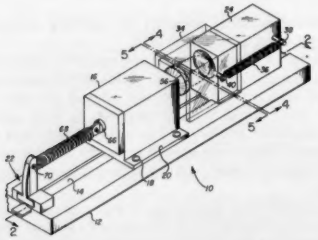
ond mold form being further adapted to nest within the closed loop of perforated plates in alignment with the first mold form to define a path of movement restricted to essentially the vertical plane and means adapted to be superimposed over the second mold form so as to urge the mold forms together under the influence of gravity.

3,841,211
PIT BARBECUE APPARATUS
Clarence Eugene Ellis, 724 Monument Rd., Ponca City, Okla. 74601
Filed Oct. 16, 1973, Ser. No. 406,960
Int. Cl. A23b *1/04*
U.S. Cl. 99—482 **2 Claims**



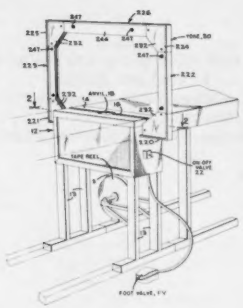
1. A cooking apparatus comprising a housing having a chimney means, a food supporting grill rack positioned within the housing at an upper level therein, a fuel tray unit adapted to support wood fuel positioned at a lower level in the housing beneath said grill rack, a heating element within the housing in the lowermost region thereof and positioned below the fuel tray unit, said fuel tray unit comprising a shallow imperforate sheet metal tray body having support legs, and bimetal support springs connected with said legs and being influenced by heat changes in said housing to cause automatic raising and lowering of the tray body relative to the heating element.

3,841,212
AUTOMATIC NUT CRACKER APPARATUS
Leroy H. Powell, 8647 Wingate, Dallas, Tex. 75209
Filed Aug. 24, 1972, Ser. No. 283,379
Int. Cl. A47j *43/26*
U.S. Cl. 99—571 **3 Claims**



1. An automatic nut cracker, comprising:
A. first and second jaw means mounted in a cracking zone for contacting a nut,
B. selectively engagable actuator means for forcing said first and second jaw means to move in a direction toward each other to crack a nut,
C. shield means movable into and out of a first position wherein said shield means covers said cracking zone for preventing portions of a nut from being propelled out of said cracking zone, and
D. control means operatively associated with said shield means and said actuator means and responsive to the movement of said shield means to said first position to cause operation of said actuator.

3,841,213
STRAPPING MACHINE FEED CONTROL
George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.
Division of Ser. No. 198,862, Nov. 15, 1971, Pat. No. 3,759,169. This application Feb. 14, 1973, Ser. No. 332,449
Int. Cl. B65b *13/04*
U.S. Cl. 100—4 **7 Claims**



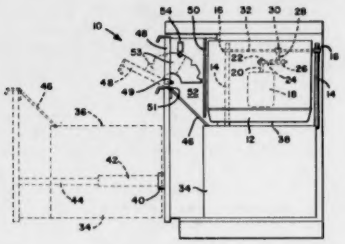
1. Article strapping apparatus of the type wherein reversible, power driven strap transport wheel means feeds the strap through an article receiving yoke and against a stop, the end of the strap is gripped, the transport wheel means is reversed to tension the strap; means for accommodating development of a loop of strap at said transport wheel means after the end of the strap has been stopped, means for sensing the devlopment of said loop, and control means responsive to said sensing means for reversing said transport wheel means from the strap feeding direction to the strap tensioning direction, the improvement wherein said control means includes means for stopping rotation of said transport wheel means when said sensing means responds to removal of said loop, and means for independently re-starting motion of said transport wheel means in the strap tensioning direction for completion of the tensioning operation.

3,841,214
COMPACTOR COMPARTMENT ARRANGEMENT
Einar O. Engebretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Continuation-in-part of Ser. No. 188,295, Oct. 12, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,995
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 **17 Claims**

1. A compactor comprising:
a. a compactor housing having a front and a rear,
b. a compaction receptacle,
c. means mounting said receptacle for movement between a compacting position in said housing adjacent the rear thereof and non-compacting positions displaced from said compacting position,
d. a compacting ram positioned adjacent the rear of said

housing above said receptacle when in said compacting position,

e. means mounting said ram within said housing for movement into and out of said receptacle when said receptacle is in said compacting position,



f. a material receiving compartment positioned within said housing adjacent said front thereof and above said receptacle and in free communication with said receptacle in a non-compacting position thereof, and

g. a door associated with said compartment for providing selective access thereto.

3,841,215

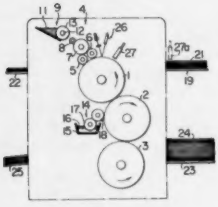
METHOD AND APPARATUS FOR CONTROL OF THE SUPPLY OF INK FOR OFFSET DUPLICATING MACHINES

Toru Hasegawa, Yabe-machi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 299,596, Oct. 20, 1972, abandoned. This application Nov. 6, 1972, Ser. No. 303,862

Int. Cl. B41l *25/00*

U.S. Cl. 101—148 **26 Claims**



1. A method of control of the supply of ink for offset duplicating machines comprising the steps of producing read-out pulses by scanning the image surface of a master plate and reading image regions of the master plate, supplying said read-out pulses to an AND circuit together with pulses of a predetermined frequency produced by a transmitter, actuating a counter while the AND circuit is operative so as to count the ratio of area of image regions of the plate to the whole area of the plate, and automatically controlling the quantity of ink supplied to the master plate in accordance with said ratio.

3,841,216

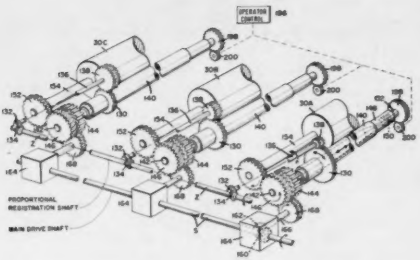
METHOD OF AND APPARATUS FOR CORRECTING DEVIATIONS IN LENGTH AND REGISTRATION IN A CONTINUOUS STRIP OF MATERIAL

Harold Walter Huffman, Fairfield, Ohio, assignor to The Hamilton Tool Company, Hamilton, Ohio

Filed Dec. 7, 1972, Ser. No. 312,816

Int. Cl. B41f *5/06*

U.S. Cl. 101—181 **16 Claims**



1. The method of synchronizing the metering rate of a continuous strip of material during its pass through a multistation device with register indicia previously applied to the strip and of simultaneously correcting deviations in register at each station, wherein the device includes an infeed means and printing cylinders at the stations and drive means connected with the infeed means and cylinders to drive them and feed the web through the device, comprising the steps of: sensing the rotational speed of the cylinders and obtaining a press-repeat signal therefrom; sensing the spacing of the register indicia on the strip as the strip passes through the device and obtaining a register indicia signal therefrom; feeding the said signals to a first controller and comparing the said signals and obtaining an immediate correction signal therefrom; utilizing said immediate correction signal to obtain a further signal which is a function of the immediate correction signal; feeding said further signal to a second controller and modifying said further signal to obtain a long range correction signal which is representative of the trend of the immediate correction signals; and controlling operation of said infeed means in dependence on both the immediate correction signal and the long range correction signal to thus obtain accurate registration control and prevent sudden and erratic changes in the metering rate of the device.

3,841,217

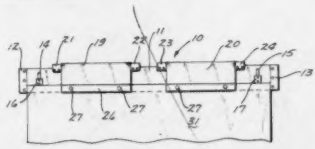
REGISTERING DEVICE

Donald W. Hodges, 624 No. 2nd St., Atchison, Kans. 66002

Continuation of Ser. No. 166,181, July 26, 1971, abandoned. This application May 2, 1973, Ser. No. 356,587

Int. Cl. B41f *1/28*

U.S. Cl. 101—413 **1 Claim**



1. A registering device for maintaining superposed sheets of material in registration including:

an elongated body member having slot means formed transversely therethrough adjacent each end thereof;

flap means including hinge means attached to one edge of the elongated body member, the flap member overlying the body member and in juxtaposition to the body member in a first position of the flap means, and being pivotably away from the body member to a second position, said flap means including a section of reduced thickness on the other edge thereof, said reduced portion being defined between the other edge and a wall means defining the boundary between the reduced portion and the non-reduced portion of the flap, said hinge means comprising two blocks having aligned bores therein, a bore in said one edge of said flap means being aligned with said bores in said two blocks and a pin being received in the aligned bores of said two blocks and said flap means to thereby allow relative movement between said blocks and said flap means;

first set means on said hinge means for adjustably positioning the hinge means and thereby the flap means along the one edge of the elongated body;

pin means connected at one end to the section of reduced thickness of the flap means and terminating in a free end at the other end of said pin means, which other end is upwardly extending away from said elongated member in the first position of the flap means, said wall means and said pin means being for holding a first sheet of material in a predetermined superimposed relationship with respect to the body member in the first position of the flap means;

adjustable positioning means slidable in the slot means and including second set means for holding the adjustable positioning means in a desired position relative to the body member to adjustably position a second sheet transversely with respect to said body member; and

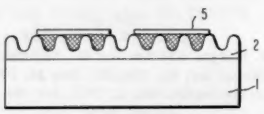
abutment means including a raised portion extending above the body member on each end of the elongated body member for positioning a second sheet of material longitudinally with respect to the body member.

3,841,218

LITHOGRAPHIC PRINTING PLATES

Hirokazu Sakaki, Odawara-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 24, 1972, Ser. No. 274,383
Claims priority, application Japan, July 23, 1971, 46-55015
Int. Cl. B41n *1/08*
U.S. Cl. 101—459 **8 Claims**



1. A lithographic and offset printing plate comprising:

a. an aluminum support:

b. a substantially non-conducting porous anodic oxidation film of aluminum on said support;

c. an electrically conductive intensified silver image formed on and in the pores of a portion of said oxidation film; and

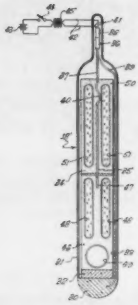
d. a copper image formed on said intensified silver image and in correspondence thereto, said printing plate thus presenting ink repellant areas of said anodic oxidation film and an ink attractive copper image.

3,841,219

DECOY ROUNDS FOR COUNTER MEASURES SYSTEM

George H. Schillreff, Glendora, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Division of Ser. No. 389,525, Aug. 12, 1964. This application Apr. 25, 1966, Ser. No. 555,641
Int. Cl. H04k *3/00*
U.S. Cl. 102—37.6 **10 Claims**



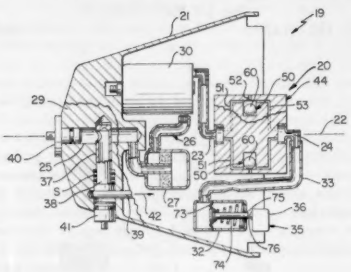
1. A decoy round adapted to be fired from a launcher comprising: a launch charge, a plurality of RF chaff bundles, a bundle containing material capable of creating infrared energy, and a plurality of explosive charges for individually dispersing said bundles.

3,841,220

SAFING AND ARMING APPARATUS FOR A MUNITION

John V. Murphy, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed July 13, 1972, Ser. No. 271,529
Int. Cl. F42c *15/1*
U.S. Cl. 102—70.2 R **8 Claims**



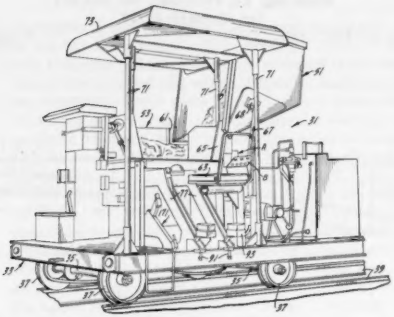
1. In combination: a munition having a reference axis and a control system for said munition; said control system comprising air intake means for receiving ambient air as ram air, an air conduit system for conveying said air from said air intake means, a control apparatus for safing said munition during normal handling and arming said munition under conditions of sustained free movement through said air, said apparatus comprising a fluidic zero G sensor having inlet means for receiving flow of said air from said air conduit system and outlet means for said fluid, an air pressure regulator operatively connected in said air conduit system for regulating the pressure level of said ram air and maintaining its output pressure at a substantially constant level thereby rendering the performance of said zero G sensor independent of said ram air inlet pressure, said apparatus employing the en-

ergy of said air to provide a usable output from said outlet means only under conditions of sustained free movement through said air and an air-operated actuator operatively connected to said outlet means, said actuator being actuated by the energy of the air flowing through said outlet means to thereby energize a circuit which arms said munition.

3,841,221
RAIL ANCHOR APPLICATOR WITH AUTOMATIC CYCLE AND LOADING MECHANISM

Andrew M. Dieringer, Waterford, and Frank F. Katcha, Milwaukee, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Sept. 5, 1972, Ser. No. 286,561
Int. Cl. E01b *29/32*
U.S. Cl. 104—17 A **12 Claims**



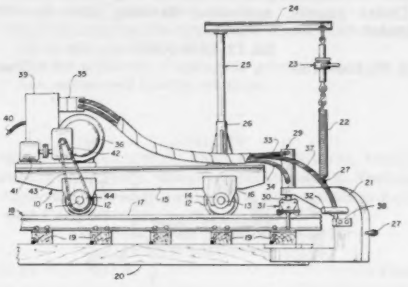
1. A rail anchor applicator including:
a wheeled frame adapted to be moved along a railroad track,
a first rail anchor storage bin mounted on said frame and accessible from the exterior of the frame,
a second rail anchor storage bin located adjacent said first storage bin and within the reach of an operator riding on said frame,
means to transfer at least a portion of said rail anchors in bulk from said first storage bin to said second storage bin, and
rail anchor applicators adapted to apply said anchors to a rail,
said means for transferring at least a portion of said rail anchors from said first storage bin to said second storage bin including means pivotally mounting said first storage bin along a side thereof adjacent said second bin, and means for raising said first storage bin to pivot it about said pivotal mounting to thereby discharge rail anchors into said second storage bin.

3,841,222
APPARATUS FOR ASSEMBLING RAIL-TIE PANELS ON ASSEMBLY TABLE

Harold E. Richeson, Downers Grove, Ill., assignor to L. B. Foster Company, Pittsburgh, Pa.

Filed Nov. 24, 1972, Ser. No. 309,233
Int. Cl. E01b *29/26*
U.S. Cl. 104—17 R **6 Claims**

1. Apparatus for assembling rail-tie panels comprising support means for holding a plurality of ties in transverse parallel elevated position with a pair of longitudinally arranged rails on said ties, a wheeled vehicle travelable on said rails, a horizontal support member pivotally supported at one end on said vehicle and having its distal end shiftable in an arc outside the confines of said vehicle, a C-frame having two spaced arms, counterbalancing means attached to the distal end of the support member for supporting said C-frame, a pressure operated cylinder supported on one arm of the C-frame and having

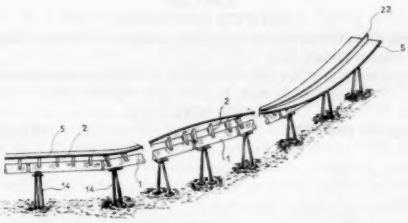


a piston rod actuable to press a spike into a tie while the reactive force of the cylinder on the other arm of the C-frame exerts an upward force on the tie concurrently with pressure exerted through the piston rod, on the head of the spike.

3,841,223
TRACKS ALONG WHICH GROUND-EFFECT MACHINES IN PARTICULAR TRAVEL

Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Societe De L' "Aerotrain", Puteaux, France

Filed Nov. 24, 1972, Ser. No. 309,444
Claims priority, application France, Dec. 1, 1971, 71.43047
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **5 Claims**

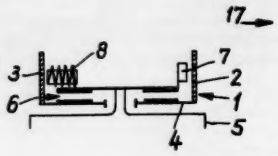


1. A track structure designed for bearing and guiding movable bodies by means of an elevated bearing track surface fast with at least one guiding upright and borne by a web assembly which is formed of a continuous succession of generally cylindrical tubular elements and which is supported on spaced pylons above the ground, wherein the improvement comprises:
a multiplicity of generally planar solid strutting bracket members interposed between said bearing track surface and said web assembly and spaced along the span thereof, said bracket members being of generally triangular shape and having a substantially rectilinear flared end adjacent said bearing track surface and extending crosswise thereof and a substantially circular tapered end adjacent said web assembly and encompassing the same; and
support means for said web assembly on said pylons, spaced from said bracket members and comprising a baseplate fitted on top of each pylon, and a strut section fast with both said baseplate and said web assembly.

3,841,224
VEHICLE CONTROLLED SWITCH SYSTEM

Erwin Hejj; Dieter Sigl; Hans Soddemann, and Dieter Zimek, all of Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 10, 1972, Ser. No. 296,090
Claims priority, application Germany, Oct. 9, 1971, 2150407
Int. Cl. E01b 25/22
U.S. Cl. 104—105 8 Claims

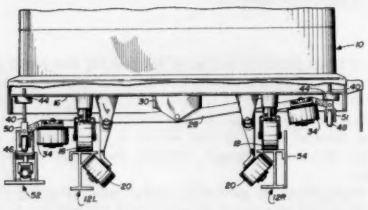


1. In combination with a guided transport vehicle and with track means having separate supporting means and guiding means for said vehicle and comprising a first track and at least one second track branching off from said first track, a switch which includes: a permanent magnet connected to said vehicle in the vicinity of but in spaced relationship to that one side of said track means from which said second track branches off, said track means being provided with soft magnetic material within the region where said second track branches off from said first track for cooperation with said permanent magnet to cause said vehicle to be pulled into said second track in response to a predetermined magnetic interaction between said permanent magnet and said soft magnetic material, and power operable means arranged in said vehicle itself and operable selectively from within said vehicle to make said permanent magnet ineffective.

3,841,225
INERTIA SWITCHING

Ivan E. Johnson, Richardson, Tex., assignor to Docutel Corporation, Dallas, Tex.

Continuation of Ser. No. 7,675, Feb. 2, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,576
Int. Cl. E01b 25/28
U.S. Cl. 104—130 18 Claims



1. Apparatus for guiding a wheeled vehicle around a track layout having divert ramps and divert plates arranged at change of direction locations, comprising:

a divert arm rotatably mounted to the undercarriage of said vehicle along a longitudinal axis thereof and having two stable positions,

divert means attached to one side of said divert arm in a position to engage a selected arrangement of said divert plates with the arm in one of the two stable positions,

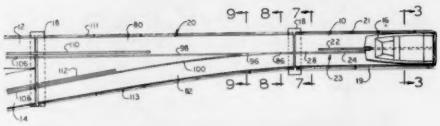
second divert means attached to the opposite side of said divert arm in a position to engage another selected arrangement of said divert plates with the arm in the second of the two stable positions, and

actuating means attached to said divert arm to engage said divert ramps to rotate the divert arm to one of the bistable positions depending on the desired direction of the wheeled vehicle.

3,841,226
ON BOARD SWITCHING APPARATUS FOR TRACKLESS AIR CUSHION VEHICLE

Richard L. Maison, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 24, 1972, Ser. No. 283,364
Int. Cl. B61b 13/08
U.S. Cl. 104—130 5 Claims



1. A switching system for trackless air bearing vehicles comprising;

a main guideway section having a substantially flat top surface with a reaction rail extending upwardly from its top surface,

a pair of branch guideway sections each having a substantially flat top surface with a reaction rail extending upwardly from its top surface,

said main guideway section being longitudinally spaced from said pair of branch guideways,

a switch guideway section having a substantially flat top surface positioned with one of its ends adjacent one end of said main guideway and with its opposite end adjacent one of the ends of each of said pair of branch guideways, channel means formed in the top surface of said main guideway section, said pair of branch guideway sections, and said switch guideway sections, said channel means being laterally offset from said reaction rails,

said channel means having a switch insertion section, a wall discrimination section, a locking section, and a switch junction section with them aligned in the same order that they are enumerated,

a trackless air bearing vehicle having means on its under surface for guidingly receiving an upwardly extending reaction rail and also a retractable switch mechanism mounted on the under surface of said vehicle with said switch mechanism being laterally offset from said means for guidingly receiving an upwardly extending reaction rail, and

said retractable switch mechanism comprising air bearing means which when lowered ride in said channel means to guide said vehicle through the switching system, said air bearing means being positioned in close proximity to the vertical walls of said channel means whereby when air is supplied under pressure to the orifices adjacent one of said vertical walls, the air bearing means is drawn toward that wall of said channel means causing said air bearing vehicle to be switched to a predetermined branch guideway.

3,841,227

SUSPENSION SYSTEM FOR A MAGNETIC SUSPENSION RAILROAD

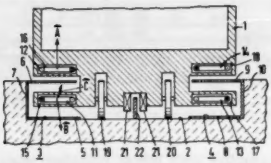
Hermann Fink, Davis, Calif., assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Sept. 24, 1973, Ser. No. 399,949

Claims priority, application Germany, Oct. 13, 1972, 2250372

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 SS **15 Claims**



1. A magnet system for the guidance and suspension of a vehicle moving along a roadbed comprising:

a. two U-shaped guidance channels arranged in the direction of the roadbed and attached thereto, each comprising upper and lower parts lying in planes substantially horizontal and a lateral part substantially vertical, said guidance channels being constructed so as to provide eddy current paths in each of said upper, lower and lateral parts;

b. a first plurality of magnet coils mounted in the vehicle and lying in a horizontal plane which falls between the upper and lower parts of the guidance channel; and

c. a second plurality of magnet coils arranged in a horizontal plane above the horizontal plane containing said first plurality of magnet coils, said plane being vertically above the upper part of said guidance channels, whereby said first plurality of coils will react with their respective lower parts of said guidance channels to provide a normal flux system for vertical suspension and said first and second plurality of magnet coils will act in pairs with their respective upper parts of said guidance channels to form a zero flux suspension system.

3,841,228

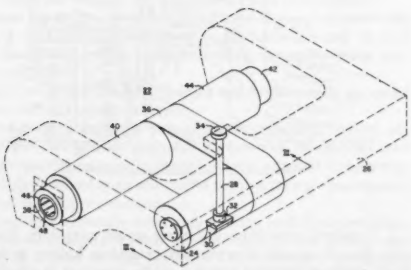
TRACTION DRIVE SUSPENSION SYSTEM FOR A RAIL VEHICLE

Walter O. Hall, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1973, Ser. No. 417,690

Int. Cl. B61c *9/00*

U.S. Cl. 105—108 **8 Claims**



1. In a suspension system for a rail vehicle truck having a plurality of axles with wheels attached thereto, the combination comprising:

first and second bearing housings attached to said truck, each including a plurality of bearings for rotatably receiving one of said axles;

a motor including a motor shaft, said motor being resiliently mounted on said truck;

a gearbox assembly having a housing and an output shaft, and including means for coupling the gearbox output shaft to said motor shaft.

means for coupling the output shaft of said gearbox assembly to said one axle; and

means for resiliently coupling the gearbox housing to said first and second bearing housings.

3,841,229

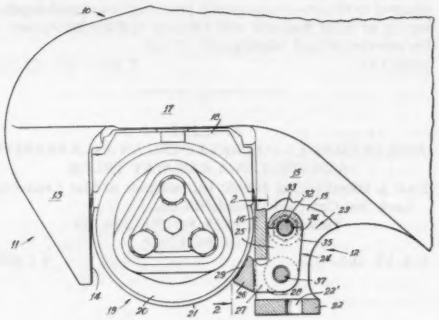
PEDESTAL RETAINING KEYS FOR JOURNAL BOXES

Edward Payson Smith, Winnetka, and Rudolph E. Nadherny, Naperville, both of Ill., assignors to Illinois Railway Equipment Company, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,929

Int. Cl. B61f *5/26, 15/02, 15/20*

U.S. Cl. 105—221 K **11 Claims**



1. In a railway car bearing construction having a roller bearing assembly located between frame side walls and reacting upwardly against a bearing adapter underneath a frame top wall and having a cylindrical housing, thrust block means adjacent an under surface of said cylindrical housing having an arcuate surface to limit movement thereof away from said top wall, means pivotally mounting said thrust block means on one of said side walls to swing toward and away from said cylindrical housing, and removable means extending transversely of said mounting means and reacting against said one side wall to hold said thrust block means in operative position relative to said cylindrical housing.

3,841,230

RETAINER KEY FOR PEDESTAL SIDE FRAMES

Erwin J. Hasten, Jr., Chicago, Ill., assignor to Illinois Railway Equipment Co., Chicago, Ill.

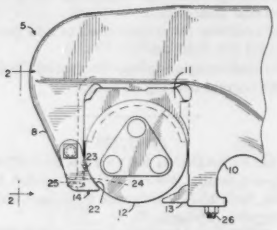
Filed Dec. 11, 1972, Ser. No. 314,174

Int. Cl. B61f *5/28, 5/52, 15/20*

U.S. Cl. 105—221 K **4 Claims**

1. In a railway car truck having pedestal jaw side frames with a frame adapter in the downwardly opening jaw between the outer and inner depending legs at each end of a side frame and a roller bearing fitting underneath each adapter, the improvement which comprises, a thrust block roller bearing retainer mounted on a depending leg at each end of a side frame for preventing each roller bearing from becoming dissassociated with respect to its adapter, each of said retainers being entirely supported on the depending leg on which it is mounted and having a concave curved surface generally conforming to the contour of the convex exterior of the adjacent

roller bearing with said concave surface being juxtaposed to a lower side portion of said bearing, each of said thrust block roller bearing retainers having a pair of spaced upstanding legs adapted to be pivoted to and fit on opposite sides of the depending leg from which it is supported and a generally horizontal foot portion interconnecting the lower ends of said upstanding retainer legs, said horizontal foot portion having said concave surface on one face and having a reverse face adapted to thrustwise engage the inner surface of said depending leg so as to maintain said concave surface juxtaposed to the exterior of said bearing.



3,841,231

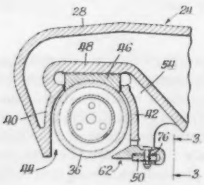
SIDE FRAME KEY FOR RETAINING AN AXLE BEARING ASSEMBLY IN A RAILWAY TRUCK

Emil J. Hlinsky, Oak Brook, Ill., assignor to Mac Lean-Fogg Lock Nut Company, Mundelein, Ill.

Filed June 1, 1973, Ser. No. 366,100

Int. Cl. B61f *5/26*

U.S. Cl. 105—221 **6 Claims**



1. In a side frame key, for retaining an axle bearing assembly between spaced vertical pedestal legs which define an open-bottomed jaw in a railway truck side frame, said key having a body with a base portion having a bottom surface including downwardly and outwardly facing shoulders defining an elongated recess extending along a moment axis at the intersection of said shoulders, said recess being engageable with a corner on one of the pedestal legs extending along said moment axis and said body having a retainer end portion extending in one direction from said base portion relative to the recess engageable with the underside of an axle bearing assembly in the jaw when said key is seated in a retaining position on said one pedestal leg; the improvement comprising:

said body having a stabilizing end portion extending outwardly from said base portion in a direction opposite said retainer end portion and having a downwardly and inwardly extending hooked end engageable with the underside of said one pedestal leg to resist rotation of said body by thrust reaction about said moment axis and thereby resist downward displacement of said retainer end portion in response to downward force exerted thereon by an axle bearing assembly within the jaw.

3,841,232

DAMPENED LOCOMOTIVE BOGIE AXLE

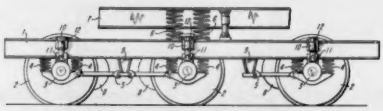
Hans Hess, Kassel, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany

Filed Apr. 14, 1972, Ser. No. 243,972

Claims priority, application Germany, Apr. 28, 1971, 2120874

Int. Cl. B61f *5/30, 5/38, 15/02*

U.S. Cl. 105—224 R **1 Claim**



1. A locomotive with bogies including wheel sets, which comprises: a bogie frame; axle springs, said axle springs forming an axle spring system; axles supported relative to said bogie frame; hydraulic damping means each fastened in a vertical plane substantially in alignment above and coinciding with the respective axle located intermediate a pair of said axle springs parallel to each other on both sides of the respective axle, said hydraulic damping means at least in part collectively damping said axle spring system, first bearing means connecting each of said hydraulic damping means to the respective bogie frame; axle bearing arrangements; second bearing means connecting each of said hydraulic damping means to the respective axle bearing arrangement; transversely alined, opposed, spaced abutments on each said second bearing means and on said bogie frame adjacent said axle bearing arrangement; said hydraulic damping means being of such a magnitude as to be able to serve during lifting of said locomotive to proportionately absorb entirely the weight of said wheel sets and the residual force of said axle springs when said wheels are lifted, while said opposed abutments limit movement of said axle transversely of said bogie frame.

3,841,233

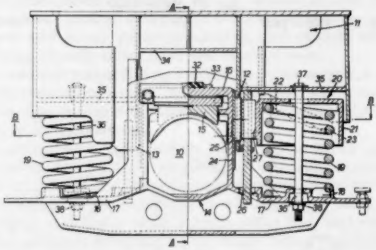
DAMPENED RAILWAY CAR TRUCK AXLES

Frederick William Sinclair, Gloucester, England, assignor to Gloucester Railway Carriage & Wagon Company Limited, Gloucester, England

Filed Oct. 5, 1972, Ser. No. 295,251

Int. Cl. B61f *5/34, 5/40, 5/52*

U.S. Cl. 105—224 R **10 Claims**



1. A railway vehicle having frame means providing, at each axle journal, spaced downwardly extending hollow pedestal guide columns between which a saddle structure in which the journal is supported can slide to accommodate vertical suspension movement of the frame means relative to the axle journal, friction damping means for engagement with the saddle structure being mounted in at least one of the guide

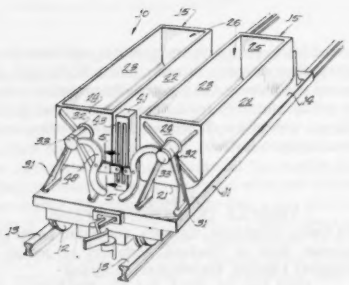
columns, and a pair of suspension springs each of which is mounted within and surrounded by the associated column so as to bear against an upwardly facing spring seat formed on the saddle structure at a horizontal level lower than the journal axis, said at least one guide column containing spring abutment means in the form of a wedge element having surfaces which are inclined to the horizontal and cooperate with surfaces of the guide column in such manner that the suspension spring force loading the abutment means results in a horizontal force urging the latter towards the saddle, which horizontal force is applied to the damping means in that pedestal guide column so that the frictional damping force rises with the load on the vehicle, the damping means being formed separate from the wedge element and cooperating with means formed by the guide column whereby said damping means is restrained against vertical movement relative to the guide column as a result of suspension movement of the abutment means.

3,841,234

DUMPING CAR

Tullio J. Nicoletti, 2224 West Central Park, Davenport, Iowa 52804

Filed Jan. 9, 1974, Ser. No. 431,866
Int. Cl. B61d *9/02*
U.S. Cl. 105—263 **4 Claims**



1. A railroad dumping car of the type having a mounting platform supported on railroad trucks for guided movement along conventional railroad tracks, the dumping car comprising:

a pair of longitudinally extending rectangularly shaped open topped box-like hoppers each having a content receiving compartment formed therein adapted to carry the same or different contents entirely separate from each other, the hoppers disposed in side-by-side adjacent relationship with each hopper having opposed end wall surfaces;

a pair of side-by-side aligned brackets disposed on each side of said platform adjacent each associated end of said associated hopper and extending upwardly from said platform;

each mounting bracket having a bearing assembly mounted at the top portion thereof;

each hopper having a pair of axially aligned trunnions affixed to opposite end wall surfaces of the hopper and projecting outwardly therefrom and adapted to be rotatably received in an associated bearing for rotative support of said hopper thereabout;

an upright vertically extending guiding post disposed intermediate adjacent ends of said hoppers and having one end affixed to said platform with said posts projecting upwardly therefrom, a pair of horizontally spaced apart vertically extending slots formed in a side member of said post;

a pair of hydraulic cylinders and piston arrangements, each of said arrangements associated with one of said guiding post slots and disposed inwardly of said guiding posts, each of said piston rods having its free end disposed in alignment with the associated slot and reciprocally movable therealong between the top and bottom ends of said slot;

hydraulic means connected to said cylinders to effect the operation thereof;

control means associated with said hydraulic means and selectable for the independent or simultaneous operation of said hydraulic means; and

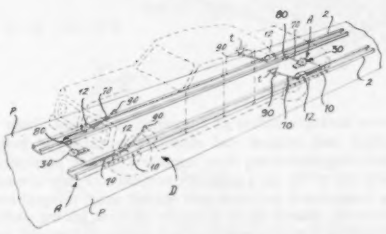
linkage means interconnecting each of said free ends of said piston rods to one of said hopper trunnions to effect the tilting rotation of said associated hopper about its axis when said piston rod moves upwardly along said slot to the top end of the slot and wherein said hopper is returned to its initial position upon said piston rod moving downwardly of said slot to its initial position adjacent the bottom of said slot.

3,841,235

WHEELED VEHICLE TIE-DOWN DEVICE

Claud R. Wheeler, Florissant, and Norbert E. Freebourn, Bridgeton, both of Mo., assignors to Broderick & Bascom Rope Company, St. Louis, Mo.

Filed Apr. 5, 1973, Ser. No. 348,301
Int. Cl. B60p *7/08*
U.S. Cl. 105—368 T **13 Claims**



1. A tie-down apparatus for securing a wheeled vehicle to a supporting structure in a fixed position on the supporting structure, said apparatus comprising: a winch supported on the supporting structure and having a rotatable drum; idler units fastened to the supporting structure near the sides of the wheeled vehicle, two elongated tying elements wound around the winch drum in the same direction so that when the winch drum is turned both tying elements will either wind further around the drum or pay out from the drum, depending on the direction of rotation of the drum, one of the tying elements being engaged with the idler unit at one side of the wheeled vehicle and extending upwardly therefrom to the wheeled vehicle to which it connects, the other tying element being engaged with the idler unit at the opposite side of the wheeled vehicle and extended upwardly therefrom to the wheeled vehicle to which it connects, and means for equalizing the forces applied to the tying elements, whereby when the winch drum is turned such that the tying elements wind around it, the wheeled vehicle is secured firmly to the supporting structure with substantially equal tie-down forces applied thereto by the tying elements.

3,841,236

CONTOUR UNDERGROUND MINE CAR

James C. Hammonds, St. Charles, and Walter E. O'Leary, Creve Coeur, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

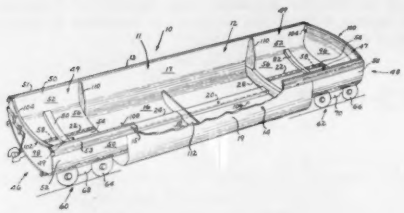
Filed Mar. 26, 1973, Ser. No. 344,747
Int. Cl. B61d *11/02*
U.S. Cl. 105—364 **35 Claims**

1. An underground mine car comprising: opposite end sections supported by railway car trucks, and a center section

having a bottom portion extending into the space between said trucks;

said center section comprising spaced apart integral center members comprising an at least partly curved side portion having a radius of curvature within the range of from about 6 to 60 feet and an at least partly curved bottom portion having a radius of curvature within the range of from about 10 to 30 feet; each of said spaced integral center members having a bottom inward curve with a radius of curvature of at least about three inches; said spaced integral center members being joined together along their respective bottom portions;

said opposite end portions comprising spaced apart integral end members comprising an at least partly curved side portion having a radius of curvature within the range of from about 6 to about 60 feet; and an at least partly curved bottom portion having a radius of curvature within the range of from about 10 to 30 feet; each of said spaced integral end members having a bottom inward



curve having a radius of curvature of at least about 3 inches; said integral end members at each end being joined together along their respective bottom portions;

at each end of the car a generally vertical end plate extending transversely between said spaced apart integral end members; spaced apart generally vertical joining plates joining the bottom portions of said center section with the bottom portions of said end sections, said joining plates extending transversely between said spaced apart integral center members;

a chord extending longitudinally along each side of the car affixed to said curved side portions on said integral central members and to said curved side portions on said integral end members; whereby lading loads applied to said center and/or end members are resisted primarily in tension, and whereby the car volume to mine volume ratio is maximized without overstressing the inward curve between the side and bottom portion of said center and end members.

3,841,237

VARIABLE TILT COLLAPSIBLE SHELF ASSEMBLY

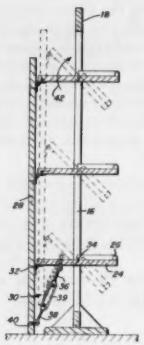
Clay D. Plymate, 3609 E. Sunshine, Springfield, Mo. 65804

Filed Dec. 14, 1972, Ser. No. 315,205

Int. Cl. A47f *5/12*

U.S. Cl. 108—6 **1 Claim**

1. A multipurpose shelf assembly comprising a pair of spaced, parallel upright support members, a plurality of shelves pivotally supported between said upright support members at points spaced vertically therealong for rotation about parallel horizontal axes fixed relative to said shelves and said support members, an upright stabilizer member, means pivotally attaching vertically spaced points of said stabilizer member to points on said shelves spaced equally from the corresponding axes of rotation of said shelves for angular displacement of said shelves relative to said stabilizer member about axes paralleling the first mentioned axes and fixed relative to said shelves and said stabilizer member, whereby said support members, said shelves and said stabilizer member coact to define a parallelogram linkage assembly between said stabilizer and support members, and a single rigid adjustable length linkage member pivotally connected at its opposite ends to the lowermost shelf and the lower end portion of said stabilizer member, said stabilizer member being disposed in a vertical plane normal to an upstanding plane containing the axes of rotation of said shelves and spaced centrally between



said spaced upstanding support members, said base including an undersurface adapted to rest upon a horizontal support surface and the lower end of said stabilizer member, when said shelves are substantially horizontal disposed, being horizontally aligned with said undersurface for also resting upon said horizontal support surface.

3,841,238

VEHICLE TRACTION SYSTEMS

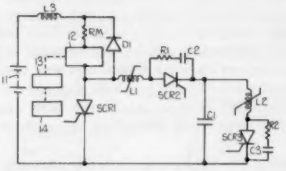
Michael Ainley Thompson, Hasbury, and Brian Leslie Phillips, Hollywood, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 26, 1972, Ser. No. 220,925

Claims priority, application Great Britain, Jan. 26, 1971, 3153/71

Int. Cl. H02p *5/16*

U.S. Cl. 180—65 **16 Claims**



1. A vehicle traction system for a vehicle having an accelerator pedal comprising an electric drive motor for the vehicle, a control system for the drive motor, said control system comprising a function generator for effecting direct variation of the motor armature current, the function generator receiving input signals representing the position of the accelerator pedal and the engine speed, said function generator comprising means dependent on said input signals for establishing a preselected output current range of minimum and maximum allowable armature currents and for maintaining said range the same as the position of the accelerator pedal is changed to vary the speed of the vehicle.

3,841,239
METHOD AND APPARATUS FOR THERMALLY DECOMPOSING REFUSE

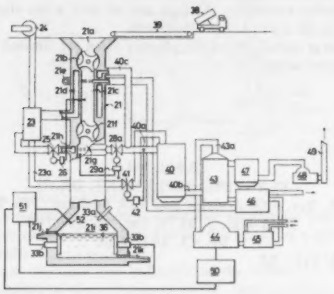
Takezo Nakamura, Amagasaki, and Yukio Iwasaki, Takarazuka, both of Japan, assignors to Shinmeiwa Kogyo Kabushiki Kaisha, Toyko, Japan

Filed June 15, 1973, Ser. No. 370,467

Claims priority, application Japan, June 17, 1972, 47-60579; Sept. 7, 1972, 47-87872; Nov. 15, 1972, 47-114416; Mar. 29, 1973, 48-36542

Int. Cl. F23g *7/00*

U.S. Cl. 110—8 C **9 Claims**



1. A method of pyrolizing and disposing of refuse comprising the steps of (A) melting a solid material into a molten bath by heating means in the lower part of a furnace closed from the outside atmosphere in which said solid material comprises vitreous matter as a component; (B) providing electrodes in said molten bath and energizing the same with an electrical current to maintain the molten state of the molten material; (C) bringing mixed refuse into contact with said molten bath and pyrolyzing the same; (D) removing a gas produced by pyrolysis of refuse from said furnace; (E) and extracting components of the refuse that have been reduced to a molten material; (F) initially providing a plasma flame to keep said molten material molten; and, next subjecting said molten material to high frequency heating to maintain the molten material molten.

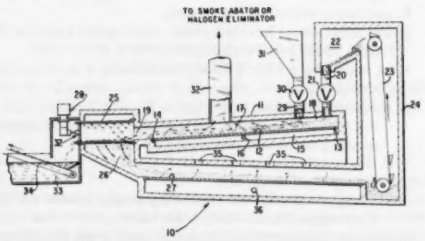
3,841,240
CONTINUOUS FLUID BED WIRE BURN-OFF APPARATUS AND METHOD

Hobart L. Wentworth, Barrington, Ill., and Karl H. Seelandt, Contoocook, N.H., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed July 6, 1973, Ser. No. 377,131

Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **8 Claims**



1. In a continuous fluid bed industrial furnace system, the combination of elongated first chamber means, an elongated porous diffusion bottom member within said first chamber having inlet and outlet means at the opposing ends thereof, said inlet end being higher than the other end so as to be inclined at a small angle, said inlet means introducing a fluidizable bed of granular material at the higher end of said bottom member to form a bed of granular material thereon, means for directing a fluid upwardly through said bed of granular material to fluidize the granular material and cause the fluidized material to move downwardly along the inclined bottom member, and means for heating said granular material, means for introducing material to be treated onto the higher end of said bottom member, an open ended cylindrical drum at the lower end of said inclined bottom member, means for rotating said drum, a second elongated chamber extending at an angle below and from said drum rearwardly of said chamber means, and conveyor means arranged at and extending vertically of said chamber means and communicating with the outlet means of said second chamber and the inlet means of said first chamber whereby said granular material and material being treated is separated by said drum and said granular material is returned by said second chamber and said conveyor to said diffusion bottom member to provide continuous treatment.

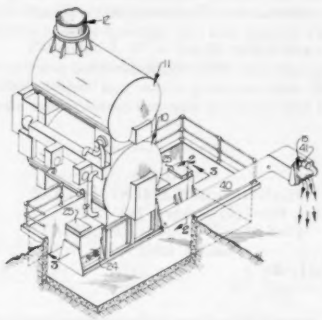
3,841,241
ASH REMOVAL SYSTEM FOR INCINERATORS

Ernest A. Dewey, Richmond, Va., and Richard F. Clements, Charlotte, N.C., assignors to Environmental Control Products, Inc., Charlotte, N.C.

Filed July 12, 1973, Ser. No. 378,657

Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **12 Claims**



1. In an incinerator including a combustion chamber for burning waste material, means for charging the combustion chamber with waste material, and an ash pit for receiving burnt material, the combination therewith of means for automatically removing the burnt material from said ash pit, said means comprising

a. conveyor means communicating with said ash pit and being operable to remove the burnt material therefrom,
b. drive means for imparting movement to said conveyor means, and
c. control means for actuating said drive means for a predetermined period and in response to each operation of said charging means.

3,841,242
APPARATUS FOR BURNING WASTE MATTER

Conrad Sigg, Ackermannstrauss 22, CH-8044, Zurich, Switzerland

Filed Nov. 28, 1973, Ser. No. 419,865

Int. Cl. F23g *5/00*

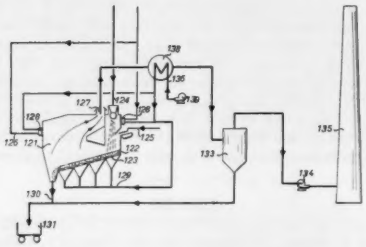
U.S. Cl. 110—8 R **13 Claims**

1. Apparatus for burning waste matter comprising:

a longitudinally inclined feed bed carrier (**35**) provided with means (**38**) for vibrating said carrier;

a plurality of hollow step-forming sections mounted in fixed positions transversely on said carrier so as to present a support surface for said waste matter that is substantially continuous except for openings in the risers of said stepped surface;

said step-forming sections being formed of overlapping plates of fire-resistant material arranged with their long dimension transverse to the longitudinal direction of said feed bed carrier and being bent on a plurality of lines substantially parallel to their said long dimension, and having an obliquely rising rear extension (**23**) under the



overlap of the next higher plate for opposing flow of waste matter from the stepped surface rearwardly into the openings;

means for introducing combustion air into the space between said carrier and said stepped sections for supplying said air through said riser openings to the combustion of said waste matter, and

retaining side walls (**36**) mounted in fixed positions on said carrier and extending above said stepped surface on either side to prevent sideways excape of said waste matter.

3,841,243

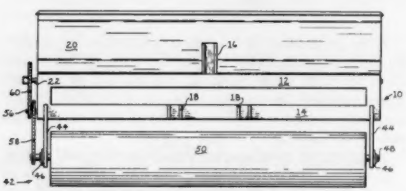
PLANTING IMPLEMENT, J-STRAP

John M. Tye, Box 218, Lockney, Tex. 79241

Filed Mar. 7, 1973, Ser. No. 338,752

Int. Cl. A01c *5/06*

U.S. Cl. 111—85 **5 Claims**



1. In an agricultural planter having

a. a frame,

b. at least one seed box,

c. planter discs,

d. means for feeding seed from said seed box to said planter discs,

e. arms attached to said planting discs, each arm called a planting disc arm,

f. said planting disc arms pivoted to the frame at their forward end;

g. a packer wheel following the planting discs,

h. said packer wheel having a tread several times wider than the furrow of said planting discs,

j. packer wheel arms extending from said packer wheel to a pivot bolt having an axis,

k. said planter disc arms extending to said same axis,

m. AN IMPROVED LOOSE CONNECTION FROM SAID PACKER WHEEL ARMS TO SAID PLANTER DISC COMPRISING:

n. a J-shaped hook,

o. the bottom bent portion of said J-shaped hook engaged about a horizontal brace on said planter disc arm,

p. the upper portion of said J-shaped hook having a plurality of holes therethrough;

q. said upper portion extending through an apperture in a plate on said packer wheel arms,

r. a cotter extending through one of said holes above said plate on said packer wheel arm

s. so that the depth of the planter discs are limited by said packer wheel.

3,841,244

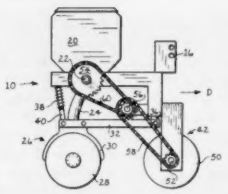
PLANTING IMPLEMENT, DRAG

John M. Tye, P.O. Address Box 218, Lockney, Tex. 79241

Filed Mar. 7, 1973, Ser. No. 338,753

Int. Cl. A01c *5/06*

U.S. Cl. 111—85 **1 Claim**



1. In an agricultural planter having

a. an elongated frame with elongated horizontal beams,

b. means on the frame for moving the frame in a direction of draft,

c. at least one seed box mounted on the frame,

d. a plurality of planter disc units for each seed box,

e. a chute from the seed box to each planter disc unit,

f. each of said planter disc units forming planter means for opening a furrow and dropping seed therein, and

g. a press wheel attached to said planter means and trailing therebehind,

h. said press wheel having an axle,

j. said press wheel having a tread width about equal to the furrow made by said planter means;

k. an improved covering device comprising in combination:

m. a rigid drag,

n. said drag including two wings,

i. the forward portion of each wing is pivoted to the axle at the press wheel on either side thereof,

ii. the middle portion of each wing extends parallel to the direction of draft, and

iii. the rear portion of each wing angles inward to drag covering soil over seed in the furrow,

o. a connecting strut extending traversely from one wing of the drag to the other,

p. said strut attached to each wing at the rear of the middle portion thereof,

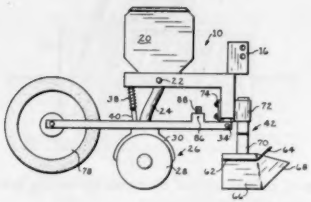
q. a pintle extending upward from the strut, and

r. ring-shaped weights on said pintle.

3,841,245
PLANTING IMPLEMENT, PRETILLING

John M. Tye, Box 218, Lockney, Tex. 79241

Filed Mar. 7, 1973, Ser. No. 338,754
Int. Cl. A01c *5/00*
U.S. Cl. 111—85 3 Claims



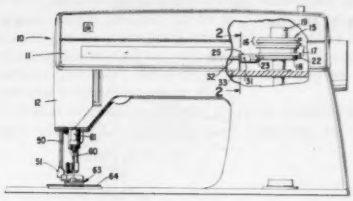
1. In an agricultural planter having
a. an elongated frame with elongated horizontal beams,
b. means on the frame for moving the frame in a direction of draft,
c. at least one seed box mounted on the frame,
d. a plurality of planter disc units for each seed box,
e. a chute from the seed box to each planter disc unit,
f. each of said planter disc units forming planter means for opening a furrow and dropping seed therein, and
g. a press wheel attached to said planter means and trailing therebehind,
h. said press wheel having an axle,
j. said press wheel having a tread width about equal to the furrow made by said planter means;
k. an improved covering device comprising in combination:
m. a rigid drag,
n. said drag including two wings,
i. the forward portion of each wing is pivoted to the axle at the press wheel on either side thereof,
ii. the middle portion of each wing extends parallel to the direction of draft, and
iii. The rear portion of each wing angles inward to drag covering soil over seed in the furrow,
o. a connecting strut extending traversely from one wing of the drag to the other,
p. said strut attached to each wing at the rear of the middle portion thereof,
q. a pintle extending upward from the strut,
r. ring-shaped weights on said pintle, and
s. a preplant tilling implement attached to one of said beams in front of said planter discs.

3,841,246
ONE STEP BUTTONHOLE OPERATING AND INDICATING DEVICES

John W. Casner; James A. Transue, both of Elizabeth, and John Skiba, Clark, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,578
Int. Cl. D05b *3/24, 29/12*
U.S. Cl. 112—77 3 Claims

1. In a sewing machine having a frame, a closed pattern unit within said frame, said closed pattern unit operable in steps from a start position to produce a closed pattern, a presser device including a portion movable with a work fabric, a mounting plate supported on said frame, and a linkage mounted on said mounting plate and including a tripping rod lever slidable to a stored position or to an operative position to be actuated by said movable portion of said presser device, said linkage and said tripping rod lever connecting said movable portion of said presser device with said closed pattern unit to initiate said step wise operation, wherein the improvement comprises:

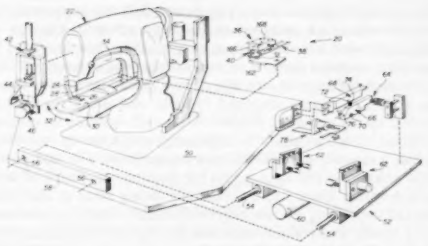


a. means associated with said linkage for indicating said start position of said closed pattern unit, and,
b. means acting on said tripping rod lever when said lever is in said stored position for causing said lever to initiate the steps of said closed pattern unit required to arrange said closed pattern unit in said start position.

3,841,247
SEMIAUTOMATIC BELT LOOP SEWING SYSTEM

Joseph W. A. Off; Darrel J. Wilbanks, and Waid O. Willcox, all of Irving, Tex., assignors to Haggar Company, Dallas, Tex.

Filed Sept. 7, 1973, Ser. No. 395,230
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 22 Claims



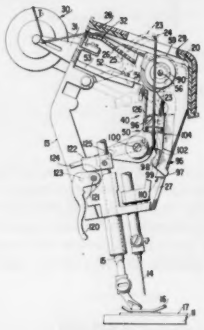
1. A semiautomatic belt loop sewing system comprising:
a sewing machine including a sewing needle supported for reciprocation along a fixed substantially vertically extending axis and a cloth plate positioned generally beneath the sewing needle for oscillation in a substantially horizontally disposed plane;
a belt loop guide chute mounted on the cloth plate for oscillation therewith;
means for advancing a belt loop along the belt loop guide chute and into a sewing position wherein the axis of reciprocation of the needle passes through the belt loop;
means for receiving the waistband of a garment and for positioning the waistband on the cloth plate of the sewing machine and in a sewing position wherein the axis of reciprocation of the needle passes through the waistband;
whereby both the belt loop and the waistband oscillate with the cloth plate as the belt loop is sewn to the waistband under the action of the sewing needle.

3,841,248

NEEDLE THREAD TENSIONING MODULE FOR LOCK STITCH SEWING MACHINES

Kenneth D. Adams, Madison, and Robert G. Greulic, Cranford, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed July 23, 1973, Ser. No. 381,824
Int. Cl. D05b *47/00*
U.S. Cl. 112—254 **4 Claims**



1. A needle thread tensioning module for a lock stitch sewing machine having a frame including a bracket arm formed with an upwardly and forwardly open slot through which a length of thread may be introduced transversely, said thread tensioning module comprising a bracket adapted to be secured within said sewing machine frame, a plurality of thread tensioning discs, means adapted for supporting said thread tensioning discs on said bracket on an axis transversely of said slot, means on said bracket for applying spring pressure to bias said discs together, an operator influenced regulator for said spring pressure applying means shiftably supported on said bracket and arranged to project outwardly through a clearance slot beneath said sewing machine bracket arm, a partition member secured on said bracket and extending from a position adjacent to one side of said thread tensioning discs to a free extremity disposed radially outwardly thereof, a check spring shiftably supported on said bracket in spaced relation to said partition member, said check spring including a free extremity extending into a recess formed in said partition extremity, and stop means for limiting movement of said check spring toward said thread tensioning discs so that said thread tensioning module may be threaded simply by insertion of a thread transversely into said sewing machine frame slot over said tensioning discs and then beneath said partition extremity.

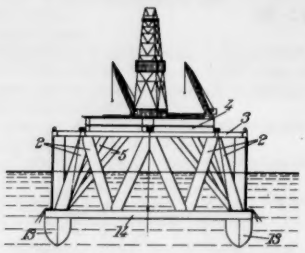
3,841,249

FLOATING SYSTEMS OF THE BARGE TYPE, ESPECIALLY FOR DRILLING IN DEEP WATER

Robert Vilain, Maisons-Alfont, France, assignor to Enterprise D'Equipement Mecaniques & Hydrauliques E.M.H., Paris, England

Filed May 9, 1972, Ser. No. 251,684
Claims priority, application France, May 14, 1971, 71.17522
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 D **9 Claims**

1. Floating system, of the barge type, said system having a horizontal support and for its buoyancy, stability and cross-bracing means consisting essentially of an assembly of two groups of hollow tubular elements, a first said group of tubular elements forming an annular shaped polygon base in a horizontal plane, and a second said group of hollow tubular elements constituting piers rising obliquely from said base, said assembly forming a cross-braced floating structure, said sec-



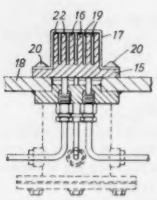
ond group of hollow tubular elements extending between said base and said horizontal support.

3,841,250

ELECTRICAL CHLORINATOR

Paul Trevor Davies, Byfleet, and John Harold Morgan, Woking, both of England, assignors to Morgen Berkeley & Company Limited, Surrey, England

Filed Dec. 21, 1972, Ser. No. 317,361
Int. Cl. B63b *35/00*
U.S. Cl. 114—.5 R **11 Claims**



1. An electrolytic chlorinator having an essentially flat rectangular base portion of plastic material adapted to be fitted on the inside of the wall of a sea-water conduit in a ship; a plurality of vanes of plastic material moulded integrally with the base portion each extending from end to end of the base portion and upstanding therefrom, there being at least one space between the vanes constituting at least one elongate open-ended channel; and electrolysing electrodes extending over the major parts of the vane surfaces which bound the channel.

3,841,251

SAILBOAT

Russell W. Larson, Spring St., Block Island, R.I. 02807

Filed Sept. 17, 1973, Ser. No. 397,891
Int. Cl. B63h *9/00*
U.S. Cl. 114—39 **7 Claims**

1. In a sailboat,

a. a deck presenting a forward portion and an aft portion,

b. a mast pivotally mounted on the forward portion of the deck,

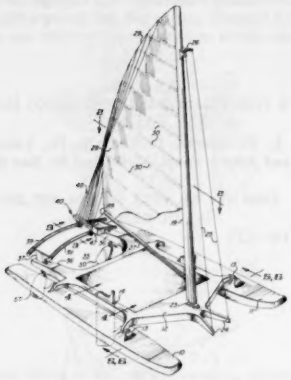
c. a boom having its forward end connected to said mast at a point constituting the lower portion thereof and extending rearwardly therefrom,

d. a sail attached to said boom and said mast above the boom,

e. a plurality of laterally displaced floats pivotally disposed

in spaced parallel relation on the underside of said deck for arcuate movement relative thereto,

f. said floats being articulated to maintain constant vertical orientation thereof as said sailboat inclines under the



effect of wind pressure on said sail, and

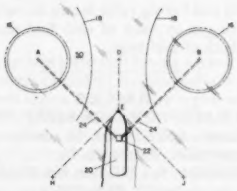
g. a single elongated rigid stabilizer strut pivotally interconnecting said floats directly vertically below the point at which said floats are articulated to said deck.

3,841,252

METHOD OF BREAKING ICE

John D. Bennett, Denton, and Preston E. Chaney, Dallas, both of Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Filed Oct. 2, 1970, Ser. No. 77,481
Int. Cl. B63b *35/08*
U.S. Cl. 114—40 **9 Claims**



1. Method of breaking ice sheets floating on a body of water comprising the steps of: injecting a gas under the ice sheet at two locations to create two spaced raised portions of the ice sheet and a resultant stressed depressed ice area therebetween; and applying a force to the stressed depressed area of ice to fracture the ice sheet.

3,841,253

HORIZONTAL SUPPORT SYSTEM FOR SHIP TANKS FOR LOW TEMPERATURE LIQUEFIED GAS

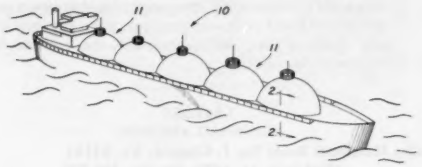
Willis James Kircik; Elmer Weyman Rothrock, both of Hinsdale, and Paul Richard Johnson, Oak Lawn, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 12, 1973, Ser. No. 350,355
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R **14 Claims**

1. In a ship having a cargo tank, with a circular horizontal cross section, which expands and contracts in service, supported in a hold therein, the improved tank support system comprising:

tank restraining means providing both vertical upward and horizontal lateral support and including a plurality of support columns depending downwardly from the tank and providing primarily vertical support to said tank, and further, said tank restraining means including a plurality of both support keys attached to the side of the tank and support blocks attached in the ship hold and adapted to receive the associated tank mounted support key thereby primarily restraining the tank from horizontal movement induced from sea conditions yet allowing thermal expansion and contraction of the tank,

each of said support keys having a pair of opposing spaced-apart vertical key contact faces extending in a plane



forming an acute angle with a radius extending from the cargo tank center to a midpoint between the spaced-apart key contact faces,

said plurality of spaced-apart support blocks joined by connecting means to the ship hold, said support blocks being located around the periphery of the tank with a support block opposite each support key, and

each support block having a pair of opposing spaced-apart vertical block contact faces positioned at the same acute angle as the key contact faces and positioned to have a block contact face in mating contact with a key contact face,

whereby upon expansion and contraction of the tank with temperature change uniform horizontal slidable support contact is maintained between mating key contact and block contact faces.

ERRATUM

For Class 114—74 see:
Patent No. 3,841,269

3,841,254

VESSEL WITH REMOVABLE SECTIONS

Gerasimos Nicolaou Dragonas, Villa Sevigne, 15 Boulevard de Suisse, Monte Carlo, Monaco, and Andrew George Spyrou, Residence Bois Joli C., Avenue de la Gare, Cap D'Ail 06, France

Filed Jan. 22, 1973, Ser. No. 325,354
Claims priority, application Great Britain, Jan. 31, 1972, 4505/72
Int. Cl. B63b *3/08*
U.S. Cl. 114—77 R **10 Claims**

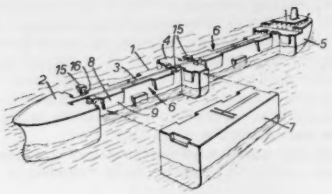
1. A vessel comprising:

a. a skeleton part carrying propulsion and steering means, comprising a bow section and a stern section connected by a spine and defining a plurality of recesses between the bow and stern sections and said spine, each said recess being open at its top and bottom and laterally of said vessel;

b. a plurality of individually floatable container portions;

c. means for releasably engaging said container portions in said recesses intermediate said bow and stern sections and laterally of said spine, said means comprising downwardly extending stationary tongue means on said skele-

ton part and upwardly opening cavity means on said container portions, said tongue means being engageable in said cavity means by relative vertical movement of said skeleton part and said container portions; and

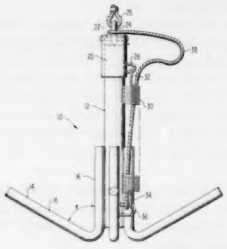


d. means for controlling the buoyancy of said skeleton part; and wherein said container portions, when engaged with said skeleton part, define therewith the exterior hull surface of the vessel.

3,841,255
NON-SNAG ANCHOR

Ray Mansfield, Route No. 1, Glasgow, Ky. 42141

Filed Sept. 11, 1973, Ser. No. 396,239
Int. Cl. B63b *21/46*
U.S. Cl. 114—206 R **1 Claim**

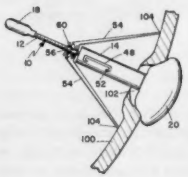


1. An anchor comprising an elongated shank, a cylindrical sleeve open at one end for reception over an end of said shank adjacent one end of said anchor, said sleeve being closed at its opposite end and carrying a hook projecting outwardly from its closed end for securing an anchor line thereto, a plurality of flukes carried by said shank adjacent the opposite end of said anchor, each of said flukes including a rod bent intermediately to form two leg portions defining an acute angle therebetween, means securing a leg portion of each of said flukes to the end of said shank at circumferentially spaced locations thereabout and extending in a direction substantially parallel to the axis of said shank, whereby the other leg portions of said flukes project radially outwardly and in a direction toward the one anchor end, means resiliently coupled between said sleeve and the opposite end of said anchor for retaining said sleeve on the end of said shank for anchor line forces of a magnitude less than a predetermined magnitude acting on said sleeve at the one anchor end, said coupling means being responsive to anchor line forces equal to or greater than said predetermined magnitude of force and in a direction away from said opposite anchor end to permit removal of said sleeve from said shank whereby the anchor line forces are transferred from said one anchor end to said opposite anchor end, a second hook projecting from a side of said sleeve at a predetermined circumferential location thereabout, and a third hook carried by said shank adjacent the opposite end of said anchor, said coupling means including a coil spring having opposite ends secured respectively to said second hook on said sleeve and said third hook on said shank, said spring extending between opposite ends of the anchor externally of said shank, secondary means coupled between said first hook on said sleeve and the third hook carried by said shank adjacent the opposite anchor end to preclude separation of said sleeve and anchor upon removal of said sleeve from said anchor, said secondary means including a cable extending from said sleeve through the coils of said spring to the opposite anchor end and having a slack sufficient to permit the sleeve to be removed from the one anchor end.

3,841,256
DEVICE FOR TEMPORARILY SEALING HOLES IN BOATS

Robert J. L. Etchelecou, 10311 Julio Pl., Lakeside, Calif. 92040, and John J. Savel, 3144 32nd St., San Diego, Calif. 92104

Filed Nov. 26, 1973, Ser. No. 419,205
Int. Cl. B63b *43/16*
U.S. Cl. 114—227 **9 Claims**



1. A device for temporarily sealing holes in boats comprising,

a tube having an end for inserting through a hole in a boat, said tube end having a first inflatable gas bag secured thereto,

a second inflatable gas bag positioned inside of said first gas bag and being connected to the end of said tube,

means for pressurized gas inflating said first and second air bags,

and said tube end having valve means for selectively passing pressurized gas to each of said first and second bags, inflating both of said bags.

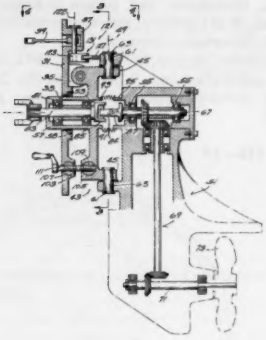
3,841,257
HIGH PERFORMANCE STERN DRIVE

Charles D. Strang, Lake Forest, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 6, 1973, Ser. No. 330,018
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 **17 Claims**

1. A marine propulsion device comprising a mounting plate adapted to be fixed to the hull of a boat, a mounting bracket, means pivotally connecting said mounting bracket to said mounting plate for vertical swinging movement about an axis which is approximately horizontal when said mounting plate is attached to the boat hull, a propulsion unit including a rotatably mounted propeller, means pivotally connecting said propulsion unit to said mounting bracket for common vertical swinging movement of said propulsion unit with said mounting bracket and for steering movement of said propulsion unit relative to said mounting bracket about a steering axis extending rearwardly of said horizontal axis, a first drive shaft supported by said mounting bracket for rotation about an axis extending perpendicularly to and vertically spaced from said horizontal axis and perpendicularly to and in intersecting relation to said steering axis, a second drive shaft drivingly connected to said propeller and supported by said propulsion unit for rotation about an axis perpendicular to said steering axis and co-planar with the axis of said first drive shaft, means for adjustably vertically swinging said mounting bracket and

said propulsion unit relative to said mounting plate through a limited range about said horizontal axis, and a universal joint extending across said steering axis and connecting said first

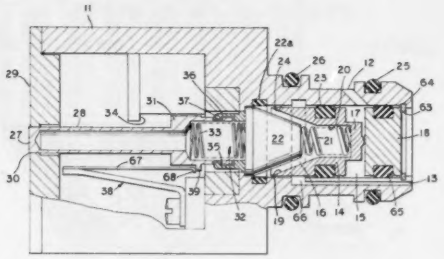


and second drive shafts notwithstanding vertical swinging movement of said mounting bracket and said propulsion unit relative to said mounting plate and steering movement of said propulsion unit relative to said mounting bracket.

3,841,258
HULL CONSTRUCTION
Chuichiro Odawara, No. 49-1, Aza Kami-ikarida, Oaza Naganawashiro, Hachinohe-shi, Aomoui-ken, Japan
Filed June 28, 1972, Ser. No. 267,144
Int. Cl. B63h *5/16*
U.S. Cl. 115—39 **3 Claims**

1. In a ship, an elongated hull having a lower region formed with a watercourse extending longitudinally through said hull from a front bow region to a rear stern region of said hull, said watercourse being situated centrally of said hull, propeller means situated in said watercourse adjacent said stern end of said hull for propelling water through said watercourse and driving the water out of the latter at the stern end of the hull, steering means carried by said hull at the stern end of said watercourse for at least partly contributing to the steering of the ship in response to issue of water out of said watercourse at the stern end of said hull, and said hull having at the front end of said watercourse an upwardly directed front wall portion which extends forwardly and upwardly from said watercourse at the bow region of the ship for contributing to lift of the ship during forward travel thereof, said front upwardly directed portion of the hull at the front end of said watercourse forming a partition, said hull being formed with a second watercourse above said partition extending rearwardly from the bow of the hull only partly longitudinally along the same and branching outwardly to opposite sides of the hull for directing water through the upper watercourse and outwardly toward the opposite sides of the hull, a second propeller means situated in the second watercourse centrally of the hull for drawing water in through the second watercourse and impelling the water toward the opposite sides of the hull, and a pair of rudders respectively situated at regions of opposed outlets of the second watercourse at the opposite sides of the hull for controlling the flow of water toward the sides of the hull at the upper watercourse.

3,841,259
DIFFERENTIAL PRESSURE INDICATOR
John Parkinson, Newark; Alfred Eibich, Parsippany, and Thomas T. Ronald, Essex Fells, all of N.J., assignors to Parmatic, Inc., Livingston, N.J.
Filed June 21, 1971, Ser. No. 154,835
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **7 Claims**



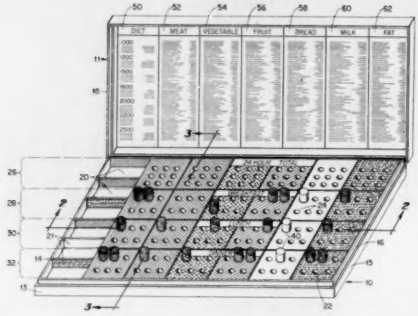
1. In a differential pressure indicator for a fluid system including a moveable piston, said piston including a magnetically attractable substance, said piston and said magnetically attractable substance enclosed in said differential pressure indicator, a high pressure fluid inlet from the outside of said differential pressure indicator opening to one side of said piston, a low pressure fluid inlet between the outside of said differential pressure indicator opening into another side of said piston, sealing means between said piston and said differential high pressure and low pressure openings, said sealing means to inhibit the flow of fluid past said high pressure and low pressure side of said piston, a magnet in said differential pressure indicator having a surface outside the differential pressure indicator area of high pressure and low pressure fluid intake, a button including a magnetically attractable substance, said button adjacent said magnet's surface outside the differential pressure indicator's area of high pressure and low pressure fluid intake, means normally biasing said button away from said magnet, said button's magnetically attractable substance normally held to said magnet, said magnet including a longitudinal portion of lesser size than the inside of said differential pressure indicator's area of high pressure and low pressure fluid intake, said piston shaped to overlap said magnet's longitudinal position when said piston is urged by said fluid differential pressure towards said magnet, said piston then drawing off magnetic flux releasing said button from said magnet decreasing the magnetic flux to release the button against its biasing.

3,841,260
DIET MANAGEMENT DEVICE
Vance R. Sharp, 109 Balsam Rd., Oak Ridge, Tenn. 37830, and Delbert L. Hollingsworth, Rt. 3, Box 12B, Leesburg, Fla. 32748
Filed Sept. 24, 1973, Ser. No. 400,569
Int. Cl. A63f *1/18*
U.S. Cl. 116—136 **4 Claims**

1. A diet management device for use in programming meals which comprises, in combination:

a. a container having a body portion and a cover portion,
b. a thin sheet member within said body portion wherein located an array of aperatures apertures arranged in a plurality of mutally perpendicular columns and rows,
c. indicia representing foodstuff groups arranged columnarly on the inner surface of said cover portion and wherein extensions of said columns extend across said sheet members and define specific foodstuff zones therein, each of said columns being of a unique color,

d. a multiplicity of removable, colored pegs conveniently rounded to be rotatably secured in said aperatures apertures, the pegs used in each of said columns being of the same color as the respective column, whereby servings of foodstuffs of known caloric value comprising the diet are visibly represented by said pegs, and



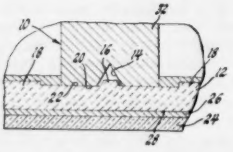
e. indicia representing time zones arranged in rows on said sheet member at right angles to and superimposed over said foodstuff zones whereby space is provided for said removable pegs to represent servings from any of said foodstuff groups in any of said time zones.

3,841,261

SELF-ALIGNING ETCH-OUT SPRAY MASK

James L. Hudson, and Larry L. Jordan, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1973, Ser. No. 325,227
Int. Cl. B05b *15/04*
U.S. Cl. 118—505 **1 Claim**



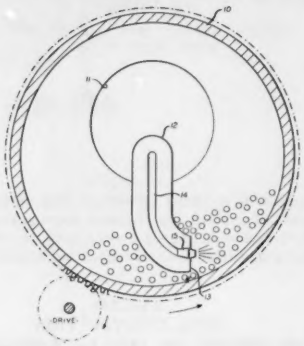
1. A spray mask which interlocks with a pattern of ridges on a face of a semiconductor wafer to enable selective deposition of wax on said wafer face prior to etching thereof, said mask being of a magnetic metal and comprising intersecting portions forming a grid having apertures, said apertures corresponding to discrete dies to be made from said wafer, said grid in a predetermined pattern generally corresponding to said pattern of ridges on said wafer face, a peripheral rim portion surrounding said intersecting portions and forming a rigid unitary body having a continuous face, grooves in said face of said unitary body corresponding to said pattern of ridges on said wafer face, said grooves having a width and depth slightly greater than the width and height of said ridges to permit nesting of said ridges in said grooves and abutment of said unitary body and wafer faces, wherein said nesting of said ridges in said grooves interlocks said unitary body with said wafer and aligns said apertures with portions of said semiconductor wafer on which wax is to be deposited and wherein said grooves are of a V-shaped cross-section subtending an angle of about 60°.

3,841,262

APPARATUS FOR COATING TABLETS

Gregor Groppenbacher, Heddesheim; Peter Rieckmann, Mannheim-Waldhof; Werner Rothe, Hockenheim; Heinz Schalk, Mannheim, and Jurgen Schellhorn, Mannheim-waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Division of Ser. No. 152,797, June 14, 1971, abandoned. This application June 7, 1972, Ser. No. 260,579
Claims priority, application Germany, June 18, 1970, 2029839
Int. Cl. B05c *5/00*
U.S. Cl. 118—19 **4 Claims**



1. An apparatus for coating tablet cores or the like with a film, comprising a container for said cores, means for rotating said container about a horizontal or inclined axis, fixed means for introducing a gas into said container immediately adjacent its bottom independently of the rotation of said container thereby to be discharged into the mass of said cores and to form a tablet-free gas space just beyond the point of gas introduction, said container being provided with an outlet for said gas, whereby gas introduced into said container traverses said container on its way to said outlet, and means for spraying liquid into said gas immediately adjacent said point of gas introduction so that said sprayed liquid flows into said container together with said gas and immediately contacts the tablets surrounding the tablet-free gas space.

3,841,263

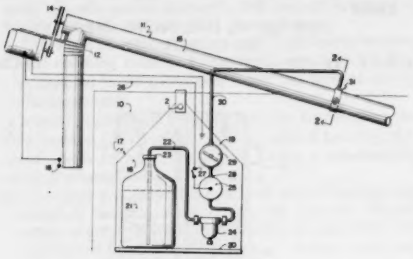
SEED TREATING DEVICE FOR DRILL FILL AUGERS AND THE LIKE

Bennett W. Rohloff, Box 572, Weyburn, Saskatchewan, Canada

Filed Nov. 13, 1972, Ser. No. 306,173
Int. Cl. B05c *5/00*
U.S. Cl. 118—303 **1 Claim**

1. A seed treating device for liquid chemicals in conjunction with a truck box or the like and a drill fill auger assembly which includes an auger tube and a source of electrical power; comprising in combination a supporting component, said supporting component including a base and a vertical member extending upwardly from said base, a liquid chemical container mounted upon said base, a pump mounted on said supporting component and being operatively connected to said container, a conduit extending between the pump output side and the associated auger tube, and a nozzle secured to and extending through the wall of said tube intermediate the ends thereof and being connected to said conduit, said supporting component being pivotally supported by the upper side of said vertical member, upon said truck box whereby said supporting component remains in the same horizontal

plane regardless of the angle of inclination of said truck box, and means to connect said source of power to said auger and



to said pump for simultaneous operation of said auger and said seed treating device.

3,841,264

APPARATUS FOR APPLYING DUST PARTICLES BY CONTACT TYPE ELECTRIC FIELD CURTAIN

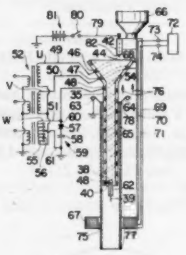
Senichi Masuda, 40-10-605, 1-chome, Nishigahara, Kita-ku, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,553

Claims priority, application Japan, Sept. 29, 1971, 46-76081

Int. Cl. B05c *5/02*

U.S. Cl. 118—622 **5 Claims**



1. Apparatus by which finely divided particulate material from a source thereof can be coated onto a cylindrical surface of an elongated workpiece, said apparatus comprising:

A. an elongated tubular guide element of electrical insulation material having a cylindrical surface which can oppose said surface of the workpiece all around the same so that said guide element can be disposed in telescoping relationship to the workpiece, said surface of the guide element having a diameter such that said opposing surfaces are radially spaced apart when the guide element and the workpiece are concentric to one another;

B. means for holding the tubular guide element and the workpiece in concentric telescoped relationship to one another and for effecting relative axial motion between the guide element and the workpiece;

C. means for introducing finely divided particular material from said source thereof into the interior of the tubular guide element from one end thereof;

D. a plurality of electrodes extending circumferentially around the tubular guide element and arranged in axially spaced relation to one another; and

E. conductor means connecting each electrode with only one terminal of an alternating voltage source, axially adjacent electrodes being connected with different terminals so that a varying potential difference exists between each pair of axially adjacent electrodes to produce an electric field that controls the motion of said material in the direction lengthwise of the guide element.

3,841,265

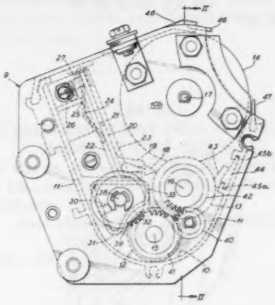
DEVELOPER ASSEMBLY FOR ELECTROSTATIC COPIER

David E. Howarth, Fairport; P. La Rue Teaney, and Edward R. Glowach, both of Rochester, all of N.Y., assignors to Zerox Corporation, Stamford, Conn.

Filed Aug. 14, 1972, Ser. No. 280,215

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **7 Claims**



1. An electrostatic developer assembly comprising:

a developer housing forming a toner sump;

a highly porous sub-donor roll comprising an open cell foam material disposed to move in juxtaposition to the bottom of said sump, a lightly etched polymer coated donor roll, and a fur developing brush mounted for rotary movement within said developer housing with said sub-donor roll positioned adjacent the bottom of said sump;

whereby said donor roll has surface contact with both said sub-donor roll and said brush to transfer toner from one to the other thereof;

means rotating said rolls and said brush in the same direction whereby the respective mating surfaces thereof move in opposite directions at their points of tangency and

a resilient silicone rubber blade having edge contact with said donor roll for stripping excess toner from said donor roll prior to contact thereof with said brush.

3,841,266

APPARATUS AND METHOD FOR ARTIFICIAL CULTIVATION OF SHRIMP

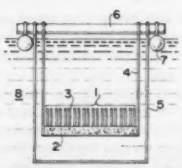
Shohei Hoshino, Miyazaki, Japan, assignor to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 6, 1973, Ser. No. 338,626

Claims priority, application Japan, Mar. 6, 1972, 47-22231

Int. Cl. A01k *61/00*

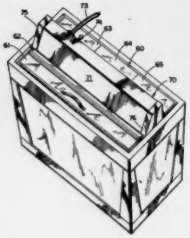
U.S. Cl. 119—2 **9 Claims**



1. A habitat mat for artificial cultivation of shrimp, which comprises a porous composite having an interconnected

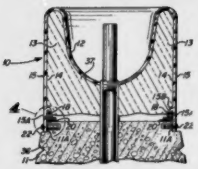
three-dimensional reticular structure formed by the entanglement of a synthetic fiber lock resistant to sea water, and seaweed-like plastic tapes which are planted on the composite to provide one tape per 4 to 25 cm^2 of said mat, said tapes having a thickness of less than 0.1 mm. and a length of from 50 to 200 mm.

3,841,267
AQUARIUM ASSEMBLY
Jack Vernon Miller, Marietta, Ga., assignor to M & L Aquatics
Filed Sept. 28, 1971, Ser. No. 184,358
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 **5 Claims**



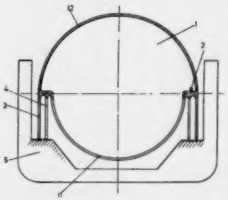
1. An aquarium construction comprising, in combination:
a. aquarium tank means, said aquarium tank means including a base frame element, a top frame element connected to said base frame element by a number of vertically extending strut members, and wherein said aquarium tank includes a bottom supported by said base frame element and upright wall means supported by said frame element, said top frame element and said vertically oriented struts, and wherein said aquarium tank includes a transparent top member supported thereon; and
b. light means supported on said aquarium, said light means being operative for producing a lighting effect within said aquarium tank, and wherein said light means is horizontally adjustable relative to said aquarium tank for altering the light effect produced within said tank,
c. said top member including a number of sections, said sections being individually movable between closed aquarium covering position and an aquarium access position;
d. said aquarium tank top frame element including a horizontal supporting surface, said light means being slidably mounted on said horizontal supporting surface for effecting said horizontal adjustment relative to said aquarium tank,
e. said aquarium top being supported on said top frame element horizontal supporting surface, and said light means being adjustable horizontally relative to said aquarium top; and
f. said light means including an elongated light housing having a pair of end members, said housing being so dimensioned that said end members are supported for sliding movement on said top frame horizontal supporting surface, said end members including inwardly directed notches, with opposite side edges of said aquarium top being slidably received within said notches, whereby said light means is adjustable relative to said aquarium top frame element and said aquarium transparent top means.

3,841,268
LIVESTOCK WATERING TROUGH
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Apr. 16, 1973, Ser. No. 351,281
Int. Cl. A01k *7/00*
U.S. Cl. 119—73 **16 Claims**



1. A trough for livestock comprising:
a molded plastic body member, the walls of which define an elongated closed-ended concave cavity extending along its length,
said walls of said cavity at the periphery of the opening outlining said cavity being turned back on themselves to define legs for supporting the trough,
said legs and the walls of said cavity forming between them a pocket extending around the cavity,
insulating means substantially filling said pocket for aiding in retaining the temperature of the substance placed in said trough, and
a flange mounted adjacent the end of said legs extending laterally and inwardly of said trough for supporting said trough on the top of a platform.

3,841,269
BEARERS FOR SOLID OF REVOLUTION TANKS ON BOARD SHIPS
Jose Rivacoba Urruela, Supelana, Spain, assignor to Tecnica Sener Industrialy Y Naval, S.A., Las Arenas, Spain
Filed Apr. 10, 1973, Ser. No. 349,723
Claims priority, application Spain, Apr. 13, 1972, 401734
Int. Cl. B63b *25/14*
U.S. Cl. 114—74 R **15 Claims**



1. The combination comprising:
1. A cargo tank having a tank shell and a central vertical axis, said cargo tank adapted to contain liquified gas and including
a. continuous peripheral structure means having upper and lower continuous stubs integrally connected with upper and lower portions, respectively, of the cargo tank shell thereby forming an annular portion of the tank shell in the vicinity of the horizontal mid-plane of the cargo tank, said continuous peripheral structure means extending in a lateral sense with respect to the vertical axis of the cargo tank and
1. defining two peripherally continuous protrusions each laterally spaced from one of said portions of the cargo tank shell, said two continuous protrusions being spaced laterally relative to the vertical axis of the cargo tank and with respect to one another,

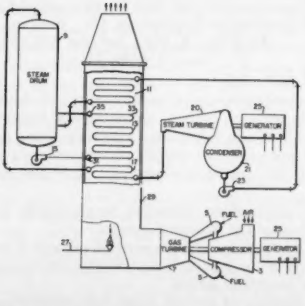
2. a first peripherally continuous bearing and coupling member surrounding said one portion of the cargo tank shell, laterally spaced outwardly with respect thereto, and having a substantially vertical orientation,
   a. One edge of the first peripherally continuous bearing and coupling member being continuously and rigidly connected to the protrusion nearer the vertical axis of the cargo tank,
3. a second bearing and coupling member surrounding the first bearing and coupling member, spaced laterally outwardly with respect thereto, and having a substantially vertical orientation,
   a. the upper and lower edges of said second bearing and coupling member being continuous and one of said edges being rigidly and continuously connected to the peripherally continuous protrusion remote from the vertical axis of the cargo tank,
4. supporting structural means for mounting the cargo tank in a marine vessel for transportation thereby or for storage adapted to be fixed to the structure of the marine vessel, said supporting structural means rigidly and continuously interconnecting the other edges of said bearing and coupling members at a location vertically spaced from said peripheral structure means with said bearing and coupling members vertically extending from said peripheral structure means to said location free of interconnecting structure and vertically unstiffened, and
5. said peripheral structure means, said bearing and coupling members and said supporting structural means being constructed and arranged to interconnect the cargo tank shell to a marine vessel and to co-act so that in repose one of the bearing and coupling members is in compression and the other bearing and coupling member is in tension,
   a. to check all movements of the tank relative to the marine vessel,
   b. to prevent high stresses being induced in the tank shell or any bearing or supporting structure as a consequence of dimensional changes of the tank shell due to temperature differentials,
   c. to reduce strongly bending moments in the tank shell, and
   d. to prevent stress concentrations from occurring where the tank shell connects with support structure.

3,841,270

FLOW RESTRICTOR FOR AN EVAPORATOR

Peter F. Sokolowski, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1972, Ser. No. 302,948
Int. Cl. F22d 1/06
U.S. Cl. 122—7 R **1 Claim**



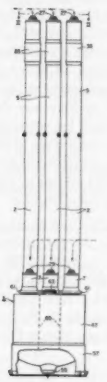
1. A boiler having an evaporator tube, said evaporator tube comprising a plurality of portions which comprise a serpentine portion disposed in communication with hot gases passing through the boiler, an elongated restricting portion disposed upstream of said serpentine portion, a converging portion fluidly connected to the upstream end of said restricting portion, and a tubular portion disposed upstream of the converging portion, said restricting portion having an opening which is smaller than the opening in said serpenting portion and said restricting portion being eccentrically disposed with respect to said serpentine portion and so related thereto that a line defining the lower boundary of the restrictor portion and a line defining lower boundary of the adjacent serpentine portion are coincident and rectilinear, said converging portion being generally frustoconically shaped, and having a major diameter of said tubular portion, whereby said serpentine portion, restricting portion converging portion and tubular portions are cooperatively associated to provide non-trapping drainage of said evaporator tube.

3,841,271

HEAT EXCHANGER HAVING A PLURALITY OF MODULAR TUBE BUNDLES

William G. Harris, Jr., and Anthony A. Massaro, Jr., both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 3, 1971, Ser. No. 120,423
Int. Cl. F22b 1/16
U.S. Cl. 122—32 **24 Claims**



1. A heat exchanger for transferring heat from a primary to a secondary fluid, said heat exchanger comprising
   at least one tube bundle having a head at each end thereof, a long stem portion, and an arcuate portion extending from said long stem portion,
   a secondary fluid port in each head of said tube bundle so disposed to permit said secondary fluid to flow through said tubes of said tube bundle,
   a separate tubular shell portion enwrapping the long stem portion of said tube bundle,
   a primary fluid port disposed in said long stem shell portion, a vessel having a primary fluid port therein,
   said arcuate portion of said tube bundle being disposed in said vessel, and
   said tubular shell being in communication with said vessel and arranged to permit flow of primary fluid along the outer surface of said tubes in the long stem portion of said tube bundle, when flow between said primary port in said vessel and said primary port in said shell portion is established.

3,841,272

FLOW DISTRIBUTOR FOR A STEAM GENERATOR

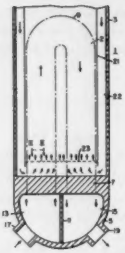
Hans Mayer, Bubenreuth; Heinz Schroder, and Gerhard Schucktanz, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 13, 1973, Ser. No. 379,158

Claims priority, application Germany, Sept. 4, 1972, 2243402

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 9 Claims



1. A steam generator which utilizes a primary fluid to vaporize feed-water to produce steam, said steam generator comprising a tubular shell, a plurality of U-shaped tubes disposed in said shell, a tube sheet into which the tube ends are fastened, said tubes being arranged to form a tube bundle having a hot leg portion in which influent primary fluid flows and a cold leg portion downstream of the hot leg portion, and a perforated plate disposed adjacent and generally parallel to the tube sheet, said perforated plate having flow distribution openings so disposed to increase the fluid flow adjacent a central portion of said hot leg portion of the tube bundle, said flow distribution holes including at least one large opening in said perforated plate, said opening encompassing a plurality of tubes and being disposed adjacent said central portion of said hot leg portion of said tube bundle.

3,841,273

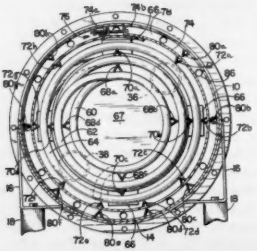
MULTI-PASS HEATING APPARATUS WITH EXPANDABLE AIR COOLED JACKET

John F. Finger, and Merle E. Pochop, both of Beresford, S. Dak., assignors to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Sept. 27, 1973, Ser. No. 401,256

Int. Cl. F22b *27/08*

U.S. Cl. 122—248 5 Claims



1. A jacket for heating apparatus, adapted to be air cooled, comprising:

a. a cylindrical fire-wall, including a longitudinally extending expansion joint;

b. a cylindrical housing;

c. means for mounting the cylindrical fire-wall within the cylindrical housing, including means for spacing the fire-wall from the housing, the cylindrical housing and the cylindrical fire-wall defining a space therebetween for the passage of air for cooling the jacket.

3,841,274

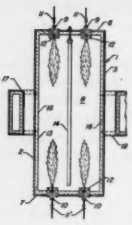
HIGH TEMPERATURE HEATER FOR FLUIDS

Marion W. Barnes, Glenview, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 29, 1973, Ser. No. 420,335

Int. Cl. F22b *21/24*

U.S. Cl. 122—356 5 Claims



1. A heater system for a fluid stream which comprises in combination, a confined radiant heating chamber for accommodating high temperature combustion gases, a plurality of tubular fluid conduits supported substantially vertically throughout the central portion of said heating chamber, fluid inlet and fluid outlet means for said fluid conduits, spaced burner means along the top and bottom portions of said heating chamber that project both downward and upward streams of flame and hot combustion gases to each side of said wluid conduits and thereby impart high temperature radiant heating thereto in an equiflux manner, and flue gas outlet means from the intermediate portions of wall sections of said radiant heating chamber that are suitable to effect the uniform removal of hot flue gases from the heating chamber.

3,841,275

RAILROAD SHIPPABLE BOILER

Charles Bisbee, East Granby; Albert Girard Story, Bloomfield, and Cesar Juan Servici, East Hartford, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 9, 1973, Ser. No. 414,487

Int. Cl. F22b *37/24*

U.S. Cl. 122—510 6 Claims

1. In combination, a Schnabel-type vehicle having separate, opposing wheeled bolsters and structural means upstanding from each of said bolsters for attaching a load therebetween and a vapor generator operably connected for road shipment between said structural means, said vapor generator comprising:

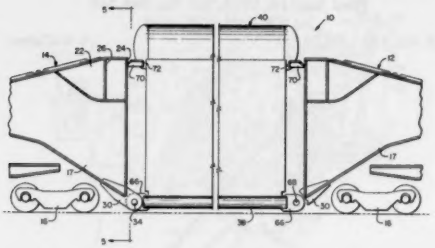
a. an upper drum extending longitudinally between said Schnabel car structural means;

b. at least one lower drum vertically spaced from said upper drum and extending longitudinally between said Schnabel car structural means;

c. a plurality of parallel tubes interconnecting said upper drum and said lower drum defining a substantially closed furnace cavity;

d. means forming a tensile connection between the ends of

said lower drum and the adjacent Schnabel car structural means; and

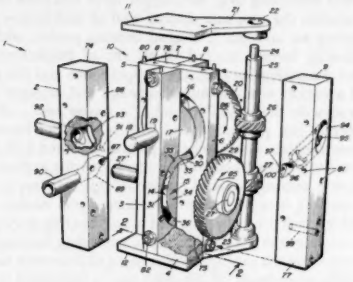


e. means forming a compressive engagement between the ends of said upper drum and the adjacent Schnabel car structural means.

3,841,276
ROTARY DEVICE

John S. Case, 1150 Gypsy Ln., Towson, Md. 21204

Filed Feb. 7, 1973, Ser. No. 330,188
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.47 **13 Claims**

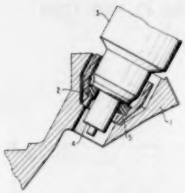


1. A power conversion device, comprising, a casing; an intake rotor and a power rotor intermeshing with each other and mounted respectively for rotation in intersecting planes within the casing; each of the rotors including a piston projecting from each rotor, the piston having a beveled leading edge, a beveled trailing edge, and side faces joining the leading and trailing edges; the leading and trailing edges of the pistons engaging and sealing against each other during rotation of the rotors; the casing mounting the rotors for rotation in close fitting relation to the side faces of the pistons, the casing including first and second circumferential spaces intersecting at the intermeshing region of the rotors; a combustion chamber defined in part by a first recess in a wall of the first circumferential space of the casing and at a location adjacent adjacent to but spaced from the location of intersection of the circumferential spaces, and defined in part by a second recess in a side face of the piston of the intake rotor at a location adjacent to but spaced from the leading edge of the intake rotor piston, said second recess being between the leading and trailing edges of the piston; the second recess of the intake rotor piston opposing the first recess in the wall of the casing during at least a portion of each revolution of the intake rotor and communicating combustion pressures in the first recess to the second circumferential space in a direction toward the trailing edge of the power piston; whereby, pressures from combustion within the power conversion device are directed away from the leading edge of the intake piston.

3,841,277
INJECTION VALVE FOR AN INTERNAL COMBUSTION ENGINE

Manfred Schafer, Am Sonnenhang 25, 7056 Beutelsbach, Germany

Filed Oct. 6, 1972, Ser. No. 295,693
Claims priority, application Germany, Oct. 6, 1971, 2149817
Int. Cl. F02m *61/14*
U.S. Cl. 123—32 R **9 Claims**

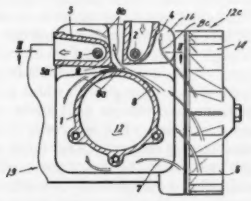


1. An injection valve arrangement for an internal combustion engine, comprising: an injection valve secured at the internal combustion engine, a heat-insulating sleeve means interposed between said injection valve and the engine, said heat-insulating sleeve means being provided with only a small area contacting that part of the internal combustion engine at which it is secured, an elastic ring means interposed between said injection valve and said heat insulating sleeve means, said heat-insulating sleeve means having no contact whatsoever with the injection valve.

3,841,278
ENGINE COOLING SYSTEM

Dieter Frehe, Avenue Edouard Herriot, Macon, Seine-et-Loire, France

Continuation-in-part of Ser. No. 842,886, July 18, 1969, abandoned. This application July 14, 1971, Ser. No. 162,717
Claims priority, application Germany, July 22, 1968, 1751747
Int. Cl. F02f *1/32*
U.S. Cl. 123—41.61 **7 Claims**



1. In an air-cooled engine of the multicycle internal combustion type having a cylinder and a combustion chamber, and including an intake and exhaust valve arranged one behind the other relative to a stream of cooling air, the improvement comprising means forming an intake channel in the head of said cylinder and an exhaust channel, said channels being separated, one from the other, and forming an air passageway therebetween and at one side of said rearmost valve, and means for directing cooling air around both the intake and exhaust valves, along a line generally parallel to the line of said intake and exhaust chan-

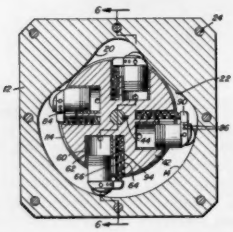
nels, and means for dividing the stream of cooling air around the rearmost valve to provide air flow through said passageway around said one side of said rearmost valve and around the other side of said rearmost valve, said divider element being positioned to provide a substantially equal flow of air around each side of the rearmost valve, said intake channel terminating with a charge receiving port, said port facing in a direction generally perpendicular to said line of cooling air flow.

3,841,279

ENGINE WITH RADIALLY RECIPROCAL ROTOR MOUNTED PISTONS

Cameron A. Burns, 5818 S. Central, Turlock, Calif. 95380

Filed July 20, 1972, Ser. No. 273,629
Int. Cl. F02b *57/04*
U.S. Cl. 123—43 C **9 Claims**



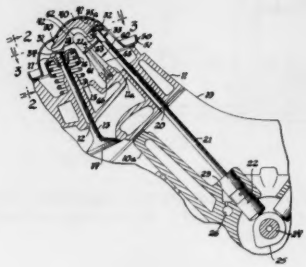
1. An engine including a casing having a generally cylindrical cavity formed therein and opposite end wall means closing the opposite ends of said cavity, a rotor journaled in said cavity, said cavity including wall portions defining a pair of ramp surfaces extending generally along circumferentially spaced chords of said cavity with the adjacent ends of said ramp surfaces spaced about the circumference of said cavity and the mid-portions of said ramp surfaces spaced at least slightly radially outwardly of said rotor, at least one cylinder bore formed in said rotor generally paralleling a radius of said rotor and closed at its inner end, a piston reciprocal in said bore and including an outer roller rollingly engaged with the inner surfaces, including said ramp surfaces, of said cavity, at least one end of said rotor including at least one port means formed therethrough opening into the inner end portion of said cylinder bore, said end wall means including intake and exhaust ports formed therethrough with which said rotor port means is registrable, said exhaust port being disposed for registry with said port means when said roller is engaged with the approach end portion of one of said ramp surfaces and said intake port being disposed for registry with said port means when said roller is engaged with the departure end of said one ramp surface, said cylinder bore being spaced laterally of said radius in the direction of intended rotation of said rotor, said rotor including a guide bore closely adjacent and paralleling said cylinder bore, a tongue rigid with and projecting outwardly from the outer end of said piston to a position over the outer end of said guide bore, an elongated guide member carried by the free end of said tongue and loosely telescoped into the central portion of said guide bore, a compression spring seated in the inner end of said guide bore, disposed about said guide member and having its outer end engaged against said tongue, said guide bore being disposed to the rear of said cylinder bore relative to the direction of intended rotation of said rotor.

3,841,280

VALVE ROCKER ARM AND PIVOT ASSEMBLY

Robert E. Lussier, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1973, Ser. No. 388,765
Int. Cl. F01l *1/18, 1/20*
U.S. Cl. 123—90.39 **6 Claims**



1. A rocker arm and pivot assembly for an internal combustion engine having a cylinder block with at least one cylinder therein and a head closing the cylinder, a poppet valve in the head and having a valve stem extending above the head and, a hollow push rod having an apertured spherical end extending above the head, said rocker arm and pivot including a rocker arm cover secured to the cylinder head and having a domed wall extending over the poppet valve and push rod in spaced relation thereto, said domed wall of said rocker arm cover having an inverted U-shaped bearing pocket with an upper bearing surface curved in an arc of predetermined radius and extending between the poppet valve and the push rod, and a rocker arm extending between and engaged at a driving end with the push rod and at a power end with the valve stem of the poppet valve, said rocker arm having a curved intermediate upper bearing portion between said driving end and said driven end with an upper bearing surface and opposed side bearing surfaces formed complementary to said bearing pocket in said rocker arm cover, said rocker arm being slidably and pivotally received in said bearing pocket for pivotal movement in the vertical plane extending between the poppet valve and the push rod while engaged therewith so that reciprocable movement of the push rod is translated to the poppet valve.

3,841,281

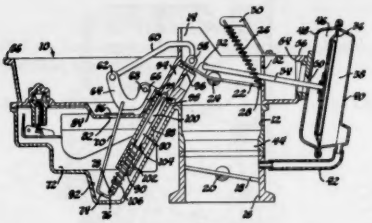
CARBURETOR

Stanley H. Mick, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,563
Int. Cl. F02m *7/12;* **F02d** *9/00*
U.S. Cl. 123—97 B **3 Claims**

1. For use with an internal combustion engine, a carburetor comprising a mixture conduit having an air inlet and a mixture outlet, a throttle disposed in said mixture outlet for controlling flow therethrough, an air valve disposed in said air inlet, means controlling said air valve to maintain a substantially constant subatmospheric pressure in said mixture conduit between said air valve and said throttle, a fuel bowl, a fuel passage receiving fuel from said fuel bowl and discharging fuel into said mixture conduit between said air valve and said throttle, an air bleed passage for discharging air at substantially atmospheric pressure into said mixture conduit between said air valve and said throttle, a valve seat formed in said bleed passage, a valve unit engageable with said valve seat to restrict air flow through said bleed pasage, and valve operating means for causing said valve unit to engage said valve seat during open throttle operation and during closed throttle

operation at speed below a selected level and for moving said valve unit away from said valve seat during closed throttle operation at speeds above said selected level to thereby permit



air to bleed into said mixture conduit between said air valve and said throttle to increase the pressure therein, whereby fuel flow to said mixture conduit is minimized during closed throttle operation at speeds above said selected level.

3,841,282

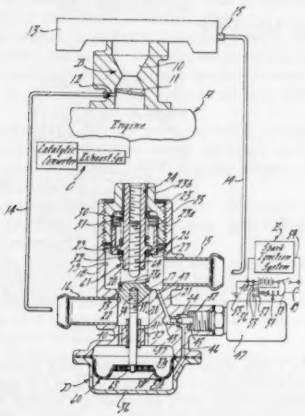
AIR SUPPLY VALVE

Jerry B. Rogerson, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 28, 1973, Ser. No. 336,594

Int. Cl. F02m *23/04*; **F02d** *33/02*

U.S. Cl. 123—97 B **2 Claims**



1. In an internal combustion engine having an induction system for supplying a mixture of air and fuel to an intake manifold thereof and a spark ignition system, the combination comprising:

a. a duct supplying ambient air to said intake manifold,

b. means controlling admission of air through said duct only during conditions of engine deceleration, said means being effective to vary the quantity of ambient air so admitted in proportion to the magnitude of said engine deceleration, and

c. means responsive to de-energization of said spark ignition system to override said proportioning means so that a predetermined maximum amount of ambient air is admitted through said duct.

3,841,283

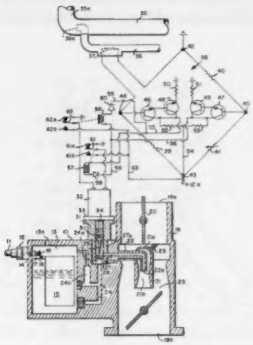
APPARATUS FOR REDUCING SMOG PRODUCING EMISSION FROM INTERNAL COMBUSTION ENGINES

Henry P. Wood, 5770 Winfield Blvd., No. 3, San Jose, Calif. 95030

Filed Oct. 12, 1972, Ser. No. 296,828

Int. Cl. F02m *77/18*; **F02b** *75/10*; **F02m** *7/00*

U.S. Cl. 123—119 R **5 Claims**



1. In apparatus for reducing the smog producing emission from an internal combustion engine, the combination comprising an electrical resistor supported in exhaust pipe means of the internal combustion engine, the electrical resistance of said resistor varying with the thermal conductivity of the exhaust gas passing through said exhaust pipe means, an electric motor, a carburetor having a valve through which fuel is fed from the carburetor to the intake manifold of said engine, mechanical means coupling said valve to said motor, and electrical bridge circuit, said resistor being connected to form one leg of said bridge circuit, a source of current supply connected across said bridge circuit, the current from said source heating said resistor to a predetermined temperature at which the resistance of said resistor is such that said bridge circuit is balanced, amplifying means comprising a pair of amplifiers, means connecting the individual ones of said pair of amplifiers to opposite sides of the output of said bridge circuit, said amplifying means being responsive to the unbalancing of said bridge circuit so that one of said amplifiers is activated when the resistance of said resistor is increased by said exhaust gas and the other of said amplifiers is activated when the resistance of said resistor is decreased, means controlling the energization of said motor connected to said amplifying means, said motor controlling said valve and varying the feeding of fuel to said carburetor in accordance with the thermal conductivity of the engine exhaust gas.

3,841,284

EXHAUST GAS HEATED ENGINE INTAKE MANIFOLDING AND FUEL VAPORIZER

Richard P. Krygowski, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

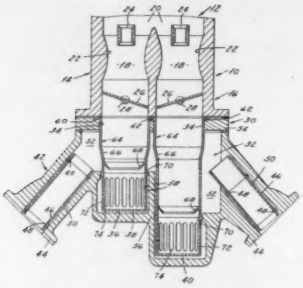
Filed Mar. 22, 1973, Ser. No. 343,745

Int. Cl. F02m *33/00*

U.S. Cl. 123—122 A **6 Claims**

1. An engine fuel vaporizer for use on an internal combustion engine having an intake manifold, exhaust manifolding, and a carburetor mounted on the intake manifold and having one or more air/fuel induction passages aligned so as to discharge an air/fuel mixture into the intake manifold, the intake manifold having a number of inlet openings in one plane corresponding to the number of carburetor induction passages and aligned with the induction passages to receive an air/fuel

mixture therefrom for transmittal to the engine cylinders, the intake manifold also having in other planes essentially at angles to the one plane and spaced therefrom a number of air/fuel mixture outlets from the manifold corresponding to the number of engine cylinders, the improvement comprising: a hollow thin sheet metal heat transfer tube mounted in each of the inlets and extending from the carburetor induction passage towards the manifold outlets, the intake manifold including an engine hot exhaust gas passage passing from one side of the manifold to the other, the intake manifold also including portions spaced from each other and interconnected



by portions of the heat transfer tubes, the said portions passing through the exhaust gas passage whereby the gases pass around the interconnecting portions of the heat transfer tubes to transfer heat through the walls thereof to vaporize liquid fuel therein,

each tube having a closed cup shaped lower end portion with bottom and side walls and a number of openings in the side walls thereof, the openings being located axially a distance above the bottom wall to form a liquid fuel dam therebetween.

3,841,285

COMPOSITE CENTRIFUGAL SPEED-DEPENDENT FUEL CONTROLLER FOR FUEL INJECTION PUMPS AND ELECTRIC SIGNAL TRANSDUCER

Rolf Muller, Stuttgart-Freiberg, and Heinrich Staudt, Markgroningen-Talhausen, both of Germany, assignors to Robert Bosch GMBH, Gerlingen, Germany

Filed Mar. 12, 1973, Ser. No. 340,396

Claims priority, application Germany, Mar. 21, 1972, 7210770

Int. Cl. F02m *39/00;* **F02d** *1/04*

U.S. Cl. 123—139 E **7 Claims**

1. Composite centrifugal control for fuel injection pumps for internal combustion engines comprising

drive shaft means **(23)**;

a resilient coupling element **(25)** to dampen vibrations transmitted by the shaft means;

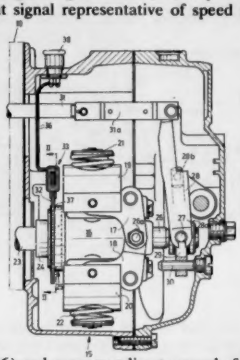
a centrifugal weight carrier **(16)** in driven connection with the resilient element **(25)**;

movable weights **(19, 20)** swingably connected **(17, 18, 26)** to the weight carrier **(16)**;

means **(21, 22)** yieldingly restraining swinging movement of the weights when the shaft rotates;

link means **(17, 18; 26, 28, 31)** connected to said weights to provide output motion representative of shaft speed, as a result of centrifugal extension of the weights upon rotation of the shaft, movement of said link means controlling the quantity of fuel being injected by the injection pump;

and a shaft rotation-electrical signal transducer **(33)** including a rotating element **(32)** in driven connection with the resilient coupling element **(25)**, mechanically coupled to the centrifugal weight carrier **(16)** to provide an electrical output signal representative of speed of the weight



carrier **(16)** and corresponding to speed of the shaft **(23)** as damped by said coupling element **(25)** and the rotational inertia of the weight carrier **(16)**.

3,841,286

ENGINE RUNAWAY PREVENTING SAFETY MEANS ASSOCIATED WITH A DISTRIBUTOR-TYPE FUEL INJECTION PUMP

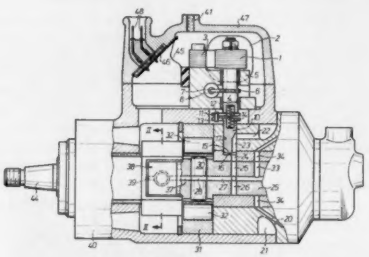
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 4, 1972, Ser. No. 277,862

Claims priority, application Germany, Aug. 4, 1971, 2138994

Int. Cl. F02d *5/00*

U.S. Cl. 123—140 R **4 Claims**



1. In a fuel injection pump delivering metered fuel to an internal combustion engine and being of the type that has (a) a distributor shaft, (b) a pump work chamber defined within said distributor shaft, (c) piston means operating in said pump work chamber, (d) a rotary component driven by said engine with an rpm that is a function of the engine rpm, (e) a movable control throttle for determining, as a function of its position, the fuel quantities to be injected, (f) rotary electromagnet means coupled to said control throttle to position the same in response to electric signals applied to said rotary electromagnet means, the improvement comprising

A. a discharge channel formed as a longitudinal bore in said distributor shaft and connected to said pump work chamber,

B. a movable valve member adapted to assume a first position obturating said discharge channel and a second position opening said discharge channel for depressurizing said pump work chamber and

C. centrifugal means mounted to said distributor shaft and including said movable valve member for moving the

latter into said second position beyond a predetermined rpm, said distributor shaft being in turn coupled to said rotary component.

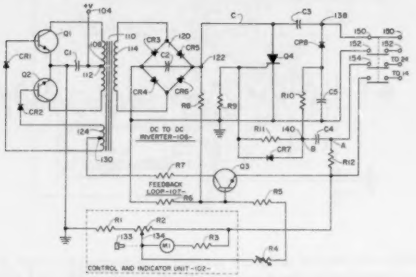
3,841,287

IGNITION SYSTEM

Tage Nielsen, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **11 Claims**



1. In an ignition system for supplying electrical energy to a spark plug in an internal combustion engine when the contacts of the ignition system are open, said system including:

a source of DC energy;

controlled oscillator means coupled to said source for supplying oscillating electrical energy in response to the DC energy, said oscillator means including an output means and a controlled input means;

transformer means including a primary winding coupled to the output means of said oscillator means, a secondary winding, and a feedback control winding being coupled to the control input means of said oscillator means;

rectifier means coupled to the secondary winding of said transformer for converting induced oscillating signals to a DC signal, said rectifier means including an output means;

energy storage means being coupled to the output means of said rectifier means for storing the DC energy from said rectifier means;

gating means being coupled to said energy storage means for discharging the energy stored in said energy storage means, said gating means including a gate input means for gating said gating means on when the contact points of said ignition system are open; and

adjustable feedback control means being coupled to the feedback control winding of said transformer means and to the output means of said rectifier means for varying the amount of energy to the controlled oscillator means and for selecting the energy level from said oscillator means to said transformer means.

3,841,288

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Aart Gerrit Korteling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

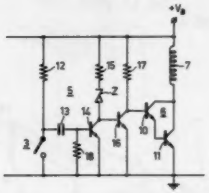
Filed Sept. 7, 1971, Ser. No. 177,945

Claims priority, application Netherlands, Sept. 5, 1970, 7013168

Int. Cl. F02p *3/02*

U.S. Cl. 123—148 E **10 Claims**

1. An ignition system for an internal combustion engine comprising, a source of DC voltage, and ignition coil having a positive temperature coefficient of resistance, a semiconductor switching device connected in series with the coil across the terminals of the DC voltage source, a control pulse generator connected to said DC supply terminals and having an output terminal coupled to a control electrode of the switching device for supplying thereto a switching control pulse for periodically switching the switching device on and off, means including the engine contact-breaker for supplying a control signal to said control pulse generator in timed relation to the engine, said pulse generator being responsive to the control signal to generate said control pulse and including an



RC network that determines the time duration of the control pulse, a first voltage reference element connected in said pulse generator so as to cooperate with the RC network and the supply voltage to determine the time duration of the control pulse whereby the time duration of the control pulse varies inversely to the DC supply voltage V_B, the value V_R of the reference voltage of the reference element being chosen relative to the value of the DC supply voltage so that, in cooperation with the RC time constant of the RC network, the time duration of the control pulse is substantially proportional to RC $\ln V_B/V_B - V_R$ and varies over the non-linear portion of the exponential curve.

3,841,289

ENGINE CYLINDER HEAD GASKET

Willis G. Meyers, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 20, 1973, Ser. No. 334,044

Int. Cl. F02f *11/00*; **F16j** *11/02*

U.S. Cl. 123—193 CH **7 Claims**

1. A composite cylinder head gasket for an internal combustion engine, said gasket comprising

a sheet metal body having a plurality of spaced cylinder openings adapted to register with the engine cylinders and at least one additional opening adapted to register with liquid containing cavities of the engine cylinder block and head,

a layer of sheet graphite covering each of the opposite surfaces of said metal body, said graphite having a density less than its maximum and being compressible to approximately its maximum density,

said composite gasket having first annular sealing portions surrounding said cylinder openings with edges of said graphite exposed thereto and a second sealing portion surrounding said at least one additional opening with edges of said graphite exposed thereto, said first sealing portions being substantially thicker than the remainder of said gasket but compressible to a thickness substantially less than the uncompressed thickness of said second

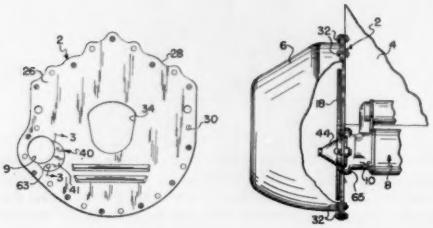
sealing portion, whereby said gasket may be compressed between opposing flat surfaces to a thickness at which the graphite of said first sealing portions exposed to said cylinder openings approaches its maximum density while the graphite of said second sealing portion is compressed to a substantially smaller extent.

3,841,290

BELLHOUSING BLOCK PLATE

Joseph J. Schubeck, Lakewood, Ohio, assignor to Scott and Fetzer Company, Lakewood, Colo.

Filed Sept. 11, 1972, Ser. No. 287,619
Int. Cl. F02f *7/00*
U.S. Cl. 123—195 A **14 Claims**



1. A block plate for use with a bellhousing of the type for enclosing the flywheel of an engine comprising,

a body,

mounting means on said body for mounting said block plate on said bellhousing,

an opening in said body for receiving a portion of an engine starter,

said body includes a removable portion adjacent said opening for enlarging said opening to enable accomodation of differently constructed engine starters, and

said removable portion is severed from the material of said body and is attached to said body by pressured engagement being adapted to be separated from said body by the application of a force thereto.

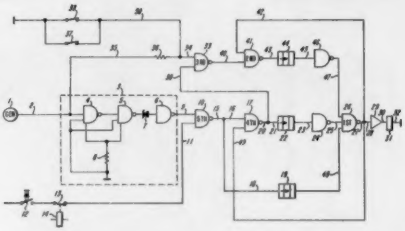
3,841,291

CONTROL ARRANGEMENT, ESPECIALLY FOR DIESEL ENGINE

Manfred Ludewig, Vellmar, and Hans-Konrad Romer, Karlsruhe, both of Germany, assignors to Rheinstahl AG, Essen, Germany

Filed Dec. 6, 1971, Ser. No. 205,205
Claims priority, application Germany, Dec. 5, 1970, 2060005
Int. Cl. F02b *77/08;* **F01p** *11/14;* **F01m** *11/10*
U.S. Cl. 123—198 DB **8 Claims**

1. A control device for automatically shutting off the fuel supply to a Diesel engine in response to the failure of an accessory thereof and comprising: electrically operable means adapted upon energization to shut off the supply of fuel to the engine, a component having an output connected to said electrically operable means and having at least two inputs, said component developing a signal at the output for energizing said electrically operable means when control signals are simultaneously supplied to the said inputs thereof, first signal supply means operated by said accessories and developing signals upon the failure of an accessory, first time delay means connected between said first signal supply means and a first of said inputs and operable in response to a signal of predetermined duration from said first signal supply means to supply a control signal to a first input of said component, second signal supply means operated by said engine and developing a signal in response to the engine reaching a predetermined speed, and second time delay means connected between said second signal supply means and a second input of said component and operable in response to a signal of a predetermined duration from said second signal supply means to supply a control signal to said second input of said component whereby



said control device becomes effective only after said engine has reached said predetermined speed, said second signal supply means including an engine driven generator and a blocking relay in the engine starting system and both of which must supply signals to operate said second time delay means.

3,841,292

HAND OPERATED CATAPULT TOY

John C. Hoffman, 37 Elm St., Delhi, N.Y. 13753

Filed Jan. 31, 1972, Ser. No. 222,138
Int. Cl. F41b *3/02*
U.S. Cl. 124—5 **3 Claims**

1. A toy comprising

a flexible wand having a handle grip on one end, and the other or front end having surface irregularities to constitute a frictional surface;

and a ball-shaped rubber-like mass having an axial opening sized to permit the mass to be co-axially selectively frictionally disposed on said frictional surface,

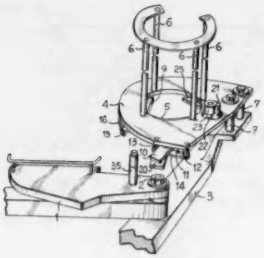
so said wand may be whipped to displace and project the mass in selected direction and with selective force to attempt to place said mass in a preselected area.

3,841,293

CLAY PIGEON DISPENSING APPARATUS

Jean Michel Laporte, and Jean-Claude Laporte, both of Pont de la Brague, 06600 Antibes, France

Filed July 26, 1973, Ser. No. 382,950
Claims priority, application France, Dec. 4, 1972, 72.42995
Int. Cl. F41b 3/04
U.S. Cl. 124—8 7 Claims



1. In an apparatus for throwing frangible targets, the apparatus including a catapult arm having loading and unloaded positions, the improvement comprising:

means for supporting a stack of targets, said supporting means being provided with a central aperture through which the targets pass, the catapult arm being in vertical registration with said central aperture when in the loading position;

pivotal latch means mounted for movement in a direction generally transverse to the direction of movement of the targets during delivery of the catapult arm, said latch means being disposed below said supporting means between said supporting means and the catapult arm, said latch means including at least a first latch having a first end which defines a retractable stack supporting tongue member, said tongue member normally extending into partial vertical alignment with said supporting means central aperture whereby a stack of objects will normally be supported on said latch means;

means biasing said latch means into said normally extended position;

a control arm extension on said first latch;

a projection on the catapult arm, said projection engaging and operating said control arm extension to cause pivoting of said control arm and its associated latch when said catapult arm is moved into registration with said supporting means central aperture whereby the lowermost target in the stack will be released for delivery to the catapult arm;

retention means vertically displaced from said latch means, said retention means being movable between a first position wherein said retention means engages at least the second target from the bottom of the stack to thereby support the stack and a second position wherein said retention means is withdrawn from contact with the stack of targets; and

means operating said retention means in synchronism with and in opposition to said latch means whereby said retention means will occupy said first position when said latch means is retracted and will occupy said second position when said latch means is in its normally extended position.

3,841,294

SPRING TYPE BALL PROJECTING DEVICE

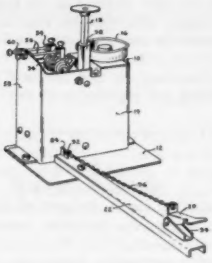
Walter N. McGill, 5027 Maryland St., Gary, Ind. 46409

Filed May 17, 1973, Ser. No. 361,017
Int. Cl. F41b 7/00
U.S. Cl. 124—16 3 Claims

1. A ball projecting device comprising:

means for supporting a ball:

a lever means pivotally supported on said device for projecting a ball, said lever means having an arm which moves about an axis to engage a ball, and said lever means having a shaft for supporting the lever means during pivotal movement thereof, said lever means further comprising a torsion spring means for biasing the arm into engagement with a supported ball, said spring means having one end thereof being non-rotatably connected to the device and the other end being connected to the arm, the intermediate portion of the spring means being coiled about the shaft;



a rod means for moving said arm to a cocked position under pressure applied by a user, said rod means comprising a link means adapted to move in response to the downward thrust of the rod means to cause the arm to move to a cocked position against the bias of the spring means;

means for locking the arm in a cocked position;

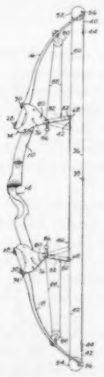
means for releasing the locking means to permit the arm to pivot under the bias of the spring means.

3,841,295

COMPOUND ARCHERY BOW

Lafayette D. Hunter, Lowell, Oreg., assignor to Donald S. Kudlacek, Longview, Wash.

Filed Aug. 20, 1973, Ser. No. 390,106
Int. Cl. F41b 5/00
U.S. Cl. 124—24 R 8 Claims



1. A compound archery bow, comprising:

a. a handle member,

b. a pair of bow limbs projecting from opposite ends of the handle member,

c. a pair of cam members, each said cam member being mounted on one of said bow limbs and each said cam

member being pivoted eccentrically adjacent the outer end of each its associated limb,

d. a bow string for projecting an arrow, said bow string spanning between said cam members and being secured intermediate its ends to the pair of cam members and forming an intermediate working stretch therebetween, a pair of opposite end segments of said bow string extending from the cam members,

e. a pair of elongated levers mounted pivotally on the bow, each said lever being positioned adjacent the inner end of its associated limb, the outer end of each lever being connected to the end segment of the bow string which is secured to the cam member on the opposite limb, and

f. a pair of tension control cables, each said tension control cable operatively interconnecting each said limb and its associated lever and each said tension control cable being positioned between the bow limb and the connection of the bow string end segment to its associated lever.

3,841,296

DRESSING DEVICE

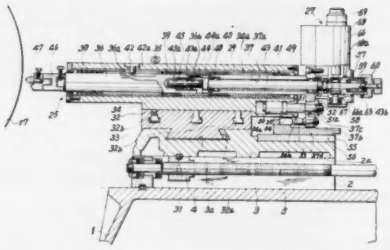
Hiroshi Ota, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Jan. 16, 1973, Ser. No. 324,127

Claims priority, application Japan, Jan. 18, 1972, 47-8337

Int. Cl. B24b *53/08*

U.S. Cl. 125—11 PH **4 Claims**



1. A device for dressing a peripheral surface of a grinding wheel mounted upon a grinding machine, comprising:

a supporting base;

a feeding table slidably mounted upon said supporting base so as to be movable toward and away from said grinding wheel by means of a table feeding device;

a template member fixedly mounted on said feeding table and having a profile face thereon;

a traverse table slidably movable upon said feeding table by suitable drive means in a direction parallel to the axis of said grinding wheel;

a main body fixedly mounted upon said traverse table;

a compensating ram means slidably mounted within said main body and provided with a dressing tool for dressing the outer periphery of said grinding wheel;

a profile ram means slidably disposed in tandem relationship to said compensating ram means within said main body;

a stylus fixedly attached to one end of said profile ram for engageable co-operation with said template member;

actuating means provided within said main body and integrally associated with said profile ram means for moving said profile ram means together with said compensating ram means toward said grinding wheel to thereby urge said stylus to contact said template member; and

feeding means operatively connected with said compensating ram for compensating the position of the same relative to said profile ram.

3,841,297

MACHINE FOR CUTTING BRITTLE MATERIALS

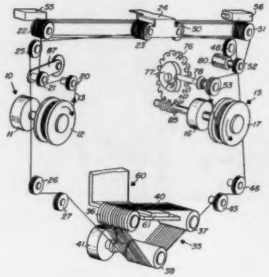
Harold W. Mech, Chicago, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Continuation of Ser. No. 203,657, Dec. 1, 1971, abandoned.

This application July 2, 1973, Ser. No. 375,575

Int. Cl. B28d *1/08*

U.S. Cl. 125—12 **13 Claims**



1. An improved machine for cutting brittle materials comprising:

a. continuous wire supply means;

b. take-up means for used wire;

c. a plurality of wire guides defining a continuous wire path between said wire supply means and said take-up means and further defining a cutting area, at least some of said wire guides including pulleys each having at lease one wire receiving groove extending around an outer surface thereof; and

d. at least some of said wire guides including a plurality of elongated axles mounted in parallel, transversely spaced apart relationship with each axle having pulley means mounted thereon with a plurality of grooves around the periphery thereof, each pulley means on each axle being canted so that grooves in pulley means on one axle and grooves in pulley means on another axle having portions of wire extending therebetween are approximately aligned along the longitudinal axis of the portion of wire extending therebetween.

3,841,298

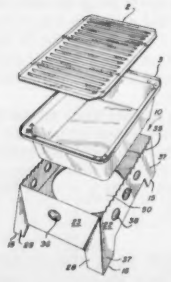
PORTABLE GRILL STAND

Thomas J. Sellors, Waukegan, Ill., assignor to Potlatch Corporation, San Francisco, Calif.

Filed Jan. 2, 1974, Ser. No. 429,906

Int. Cl. F24c *1/16*

U.S. Cl. 126—9 A **9 Claims**



1. A portable grill stand comprising, in combination,

- a panel formed with a reinforcing flue, opposed end walls, and opposed side walls,

- each of said elements being separated by fold lines therebetween,
- four legs provided at the four intersections of the respective end panels and side panels,
- the stand being characterized by isosceles trapezoidal configuration in both the end panel construction and side panel construction,

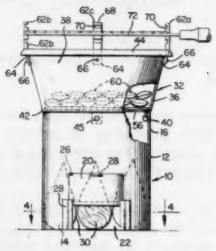
whereby a plurality may be nested, and additional strength imparted to the stand as a result of the isosceles trapezoidal configuration.

3,841,299

PORTABLE OUTDOOR GRILL AND FIRE STARTER UNIT

Rioe Tomita, 47-126 Kaimalolo Pl., Kaneohe, Hawaii 96744

Filed May 30, 1972, Ser. No. 257,718
Int. Cl. A47j *37/07*; F24b *3/00*
U.S. Cl. 126—25 B **8 Claims**



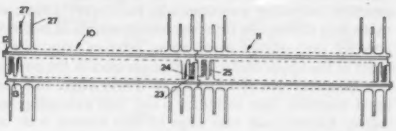
1. A portable outdoor grill and fire starter unit comprising a vertically oriented and centrally located relatively tall hollow lower body defining a fire starter box, the fire starter box having a vertical wall, a bottom joined to a base of the wall, closing the box at its bottom and forming an upward opening fire starter box, a large opening in the wall adjacent the base, through which crumpled paper or similar highly combustible material is pushed into the fire starter box and is ignited, a door connected to the wall adjacent the opening for moving out of and into an opening closing position for permitting insertion and ignition of paper and for controlling air draft moving into the fire starter box through the opening, guides mounted on the wall adjacent the large opening and extending laterally therebeyond for connecting the door to the wall and permitting selective uncovering of the opening by the door and for holding the door in a selectively opened position, said fire box having an open upper end portion, an upper body attached to said upper end portion and defining a relatively short grill body, means for attaching said grill body centrally to the upper end portion of the fire box so that it upstands therefrom in substantial vertical alignment with the interior of the fire box, burner grate means transversely disposed with respect to the interior of the fire box and arranged to close off the open upper end thereof, said burner grate means being arranged centrally in the grill body to support charcoal briquets within the bottom of the grill body so that the charcoal briquets are ignited by the combustion gases rising in the fire box from the burning paper, said grill body having an upper end portion, a foodstuff grid, and means provided on the upper end portion of the grill body for supporting the grid in a manner so that the grid closes off the upper end portion of the grill body and overlies the ignited charcoal briquets.

3,841,300

HEATING APPARATUS

John M. Kyffin Hughes, Solihull; Brian Harding, West Bromwich, and Graham Albert John Lake, Birmingham, all of England, assignors to Parkinson Cowan Appliances Limited, Stechford, Birmingham, England

Filed Dec. 12, 1973, Ser. No. 426,624
Int. Cl. F24c *3/04*
U.S. Cl. 126—91 A **9 Claims**



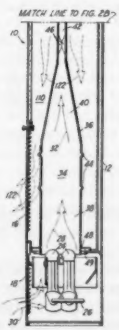
1. Heating apparatus for imparting heat to a fluid comprising a heating unit formed from at least two bodies of heat conducting material, each body having an elongated groove wherein opposite longitudinal edges of the groove are defined by a first and a second set respectively of spaced parallel walls upstanding from a base and defining respectively two rows of spaced parallel channels which communicate respectively with said opposite longitudinal edges of said groove, the two bodies being connected together with the walls of the first and second sets of one of said bodies disposed respectively in the channels defined between the first and second sets of the other body, the thickness of the walls relative to the spacing between adjacent walls of each set being such that when the two bodies are connected together to form said heating unit the walls of the first sets of the two bodies define a plurality of inlet orifices through which a fuel/air mixture can enter a combustion chamber formed by the two grooves of the two bodies and the walls of the second sets of the two bodies define a plurality of outlet passages through which products of combustion can leave said combustion chamber.

3,841,301

HEAT EXCHANGER FOR WALL FURNACE

Albert B. Chamberlain, Stone Mountain, Ga., assignor to The Atlanta Stove Works, Inc., Alanta, Ga.

Filed Feb. 27, 1973, Ser. No. 336,201
Int. Cl. F24h *3/08*
U.S. Cl. 126—110 R **5 Claims**



1. A heat exchanger for a warm air furnace comprising:
a combustion chamber including a wall defining a vertically extending duct for the flow of hot flue gases;
a draft hood assembly for receiving hot flue gases from said

combustion chamber, said draft hood assembly including a relief opening for drawing fresh air into said flow of hot flue gases and baffle means for deflecting said flow of hot flue gases and fresh air downwardly into a secondary heat exchanger to a point lower than said relief opening, said secondary heat exchanger extending upwardly from said point to provide a path for the flow of said flue gases to a flue vent opening, said draft hood assembly including a draft hood chamber positioned between said relief opening and said secondary heat exchanger, said draft hood assembly including a substantially horizontal bottom wall extending rearwardly from the lowest margin of said relief opening into partial overlapping relation only with respect to the upper end of said flue gas duct of the combustion chamber and terminating in a rear edge, said draft hood assembly also including a top wall extending rearwardly beyond said rear edge of said bottom wall, and said baffle means comprising a baffle plate extending downwardly from said top wall of the draft hood assembly and terminating in a lower edge disposed rearwardly of and above said rear edge of the bottom wall to define an opening between said rear edge and said lower edge leading downwardly into said secondary heat exchanger, said bottom wall and said baffle plate cooperating to prevent spilling of hot flue gases back through said relief opening; and

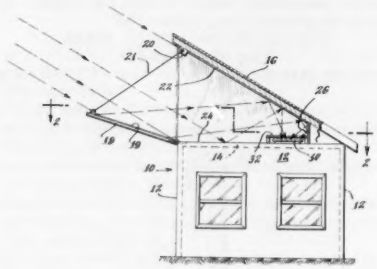
means for conveying air to be warmed in contact with the outside of said wall defining said vertically extending duct, the outside surface of said draft hood assembly, and the outside surface of said secondary heat exchanger, whereby heat from said hot flue gases will be transferred to said air to be warmed as it passes over said combustion chamber, draft hood assembly, and secondary heat exchanger.

3,841,302

SOLAR ENERGY SYSTEM FOR A BUILDING

Gerald Falbel, Stamford, Conn., assignor to Wormser Scientific Corporation, Stamford, Conn.

Filed Feb. 6, 1974, Ser. No. 439,968
Int. Cl. F24j *3/02*
U.S. Cl. 126—270 **9 Claims**



1. A solar energy system for a structure, comprising

a. a structure having a wedge-shaped space formed between a roof and a base member,

b. a pyramidal reflector having reflective interior surfaces formed in said wedge-shaped space and mounted underneath said roof and on top of said base member with the base end of the pyramidal reflector facing the sun's position near winter noon,

c. a movable reflective panel forming said base end of said pyramidal reflector adapted to open and close said pyramidal reflector to the solar energy of the sun for optimizing solar energy collection based on the angle said panel makes with the direction of the sun, and

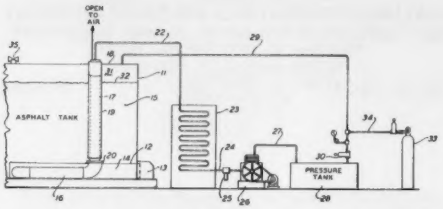
d. a solar collector mounted in said pyramidal reflector for receiving and converting solar energy focused thereon by said pyramidal reflector when said movable reflective panel is open.

3,841,303

PROTECTIVE GAS GENERATING HEATING SYSTEM FOR ASPHALT TANKS

Charles K. Martin, Boonton, N.J., assignor to Kimar Corporation, Keyport, N.J.

Filed Aug. 23, 1973, Ser. No. 391,044
Int. Cl. E01c *19/45*
U.S. Cl. 126—343.5 A **10 Claims**



1. A protective gas generating heating system for asphalt tanks comprising,

a. a tank,

b. heat generating means in the tank, the heat generating means normally producing an exhaust gas capable of significantly retarding the formation of a highly viscous surface skin normally generated by the action of air on asphalt,

c. an exhaust gas stack connected between the heat generating means and the exterior of the tank,

d. insulation means on the said stack within the said tank,

e. gas compressor means having a low pressure inlet and a high pressure outlet, the low pressure inlet being connected to the exhaust gas stack,

f. an exhaust gas accumulator tank connected to the high pressure outlet of the compressor means, and

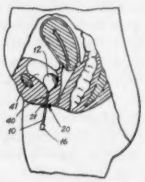
g. conduit means connected between the accumulator tank and the interior of the first said tank.

3,841,304

INFLATABLE LEAKAGE INHIBITOR

Augustin Jones, 9707 Conway Rd., St. Louis, Mo. 63124

Filed Oct. 16, 1972, Ser. No. 297,646
Int. Cl. A61m *29/02*
U.S. Cl. 128—1 R **6 Claims**



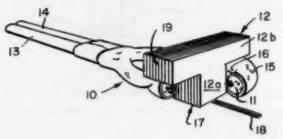
1. A surgical device of the kind described, comprising: a tube insertable through an external opening of the body communicating by a passage to an internal cavity, an inflatable balloon-like member sealed over the end of the tube with its interior communicating with the axial passage of the tube;

releasable means to prevent deflation of the balloon-like member, and stop means slidable along the tube, the stop means having releasable means self-contained in the stop means and engageable at any point along the tube to hold to the tube, to restrain movement of the stop means in the direction away from the balloon-like member, the stop means having smooth surfaces whereby it is comfortable to the user, whereby when the tube and member are inserted through the passage and the balloon-like member is inflated in the cavity, the balloon-like member may be drawn into sealing relation about the entrance of the passage and held there when the stop means is slid along the tube and engaged against the external walls of the passage.

3,841,305
EXTERNAL INDUCTIVE NEURAL STIMULATOR SYSTEM

Richard C. Hallgren, Ames, Iowa, assignor to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Oct. 25, 1972, Ser. No. 300,571
Int. Cl. A61n *1/42*
U.S. Cl. 128—1.3 **6 Claims**



1. A system for external tetanic stimulation of nerves comprising: a coil of conductive wire wound into a generally flat, circular shape providing a central lumen; magnetic core means extending through said lumen for concentrating the flux lines in the core extending through the lumen and providing an application surface for contacting an external body surface to apply electromagnetic energy, said application surface extending transverse of said core means to transversely cut the flux lines concentrated therein; and circuit means including a source of electrical energy, a discharge capacitor, first control switch means for selectively coupling said capacitor to said coil, timing circuit means for periodically triggering said first switch means to discharge said capacitor means through said coil, and detector means responsive to the charge on said capacitor and including second control switch means for charging said capacitor at a time when said first switch means is not discharging the same and for electrically isolating said capacitor from said source means when said first switch means is discharging said capacitor.

3,841,306
IMPLANTABLE, NON-CONTACTING NERVE STIMULATING TRANSDUCER

Richard C. Hallgren, Ames, Iowa, assignor to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Oct. 25, 1972, Ser. No. 300,572
Int. Cl. A61n *1/42*
U.S. Cl. 128—1.5 **4 Claims**

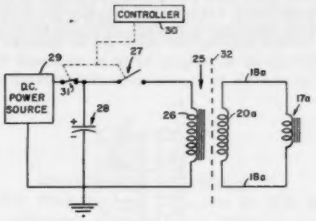
1. Apparatus for external stimulation of a nerve in a body without contacting the body comprising:

a transducer adapted to be implanted in said body including low reluctance magnetic means comprising first and second magnetic members for surrounding a nerve selected to be stimulated and providing a central lumen through which said nerve passes when said first and second members are in assembled relation;

an excitation coil including approximately three turns of conducting wire wound around one of said members;

a receiver coil adapted to be implanted in said body and including approximately six turns of wire;

conductor means connecting said excitation coil with said receiving coil and adapted to be located subcutaneously; and

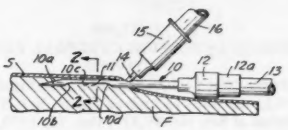


controller means adapted to energize said receiver coil externally of said body for transmitting electrical pulses to said receiver coil.

3,841,307
SUBEPIDERMAL CANNULAR INSTRUMENT AND METHOD FOR AUTOMATED DETERMINATION OF BLEEDING TIME AND BLOOD LOSS

Peter E. Friedell, 362 Elton Hills Dr., Rochester, Minn. 55901

Filed Nov. 15, 1972, Ser. No. 306,628
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 G **7 Claims**



1. In a withdrawal system for determining bleeding time and blood loss, a pickup and withdrawal instrument comprising:

an elongate cannular body having a pointed forward extremity for piercing skin and tissue,

said body having an elongate side opening defined by a pair of parallel, longitudinal cutting edges and a rear shoulder to define a pickup and mixing area of predetermined dimension, and in communication with the interior of said body,

manipulating handle means extending angularly from said body and disposed rearwardly of said pickup area to enable said cannular body to be turned and longitudinally projected substantially parallel to the skin surface after first penetration through the skin,

said body having means at its rear portion for connection with a suction conduit to effect withdrawal of a mixture of emitted blood and a mixing and carrier liquid, and

controlled liquid supply means having a discharge disposed in said pickup area for causing mixture of supplied liquid with blood in said area.

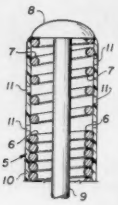
3,841,308
DISTALLY VALVED CATHETER DEVICE

Thomas E. Tate, New Hyde Park, N.Y., assignor to Medical Evaluation Devices & Instruments Corp., Gloversville, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,605
Int. Cl. A61m *25/00*
U.S. Cl. 128—2 M **8 Claims**

1. A flexible catheter-like device, including a flexible inner lumen-defining body having proximal and distal ends, a heli-

cally would spring defining an open end distal extension of said inner body and having proximal and distal ends, said distal extension being formed with the coils thereof normally separated whereby to provide normally open passages therebetween for fluid flow into or out of the lumen of said inner body, said inner body being enclosed within an outer smooth flexible sheathing, firmly bonded thereto and formed from an inert plastic material, said sheathing extending distally beyond



the distal end of said inner body to define a hollow tip for containing said spring-defined distal extension, means for closing the distal end of said distal extension, and a stylette passing through the lumen of said inner body and having its distal end affixed to said distal end closing means and having its proximal end extending proximally beyond the proximal end of said inner body for proximally contracting said distal extension to move the coils thereof into mutual contact, whereby to close the normally open passages therebetween.

3,841,309

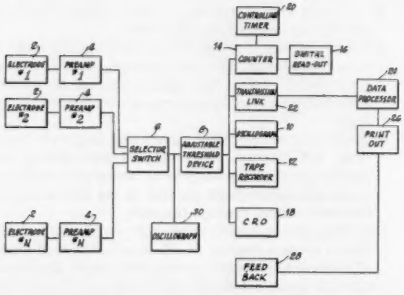
METHOD OF ANALYZING CEREBRAL ELECTRICAL ACTIVITY

Andrew Salter, New York, N.Y., and Robert Fried, East Brunswick, N.J., assignors to Andrew Salter, New York, N.Y.

Continuation of Ser. No. 99,817, Dec. 21, 1970, abandoned. This application Feb. 28, 1973, Ser. No. 336,539

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 B **14 Claims**



1. The method of analyzing cerebral electrical activity comprising the steps of:

sensing the cerebral electrical outputs from selected locations on the head of a living subject;

comparing such outputs with more than one adjustable predetermined value;

producing signals representing each time any one of said outputs has a value which exceeds any one or more of said adjustable predetermined values; and

determining the number of the signals so produced at each of said adjustable predetermined values.

3,841,310

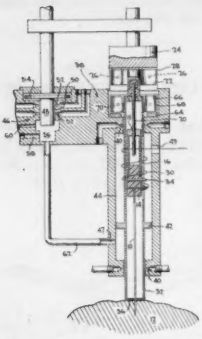
ELECTRODE INSERTION DEVICE FOR NEUROELECTRICAL RECORDINGS

Seth R. Goldstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary Department of Health, Education and Welfare, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,702

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 E **12 Claims**



1. An electrode insertion device for atraumatically obtaining single cell neuroelectrical recordings from an exposed pulsating cortex, said device comprising:

an electrode adapted for insertion into the cortex of a patient;

an elongated holder means for supporting and positioning said electrode therein such that said electrode protrudes a selected distance from an end thereof, said selected distance being representative of the desired depth of penetration of said electrode into the cortex, said end of said holder means defining a contact area for disposition on the surface of the cortex;

a housing means for said elongated electrode holder means adapted in use to be maintained in a relatively stationary position with respect to the cranium of the patient above the area of electrode insertion, said housing means having bearing assembly means for supporting said electrode holder means and said electrode therein in a substantially frictionless manner for free up-and-down movement with respect thereto along the longitudinal axis of said holder means; and means for connecting the electrode to an external device;

whereby said electrode means and said electrode therein freely follow the pulsatile movement of the cortex during recording.

3,841,311

DENTAL PULP TESTER

Ronald W. Brown, 1034 Swingin Ln., Columbus, Ohio 43220

Continuation-in-part of Ser. No. 235,391, March 15, 1972. This application Nov. 2, 1973, Ser. No. 412,352

Int. Cl. A61b *10/00*

U.S. Cl. 128—2.1 R **6 Claims**

1. A hand-held dental pulp tester comprising:

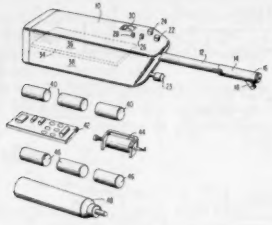
a. a housing;

b. a rigid hollow tube mounted in said housing and extending therefrom and terminating in first and second tip portions angularly displaced from each other;

c. a nozzle mounted in said first tip portion;

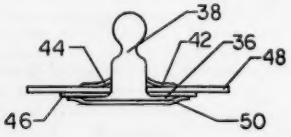
d. a pressurized container of vaporizable coolant mounted in said housing;

e. a conduit coupled between said container and said nozzle;
f. a normally closed pressure release valve means coupled between said conduit and said container;
g. cold actuator means mounted on said housing for opening said valve means to permit cold coolant vapor to be discharged through said conduit to said nozzle mounted on said first tip portion;
h. electric heating means mounted in said first tip portion;
i. means for mounting a battery in said housing;
j. terminal means in said housing for making electrical contact with a battery mounted in said housing;



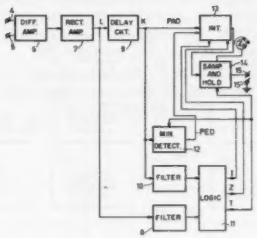
k. normally open switch means connected between said terminal means and said electric heating means;
l. heat actuator means mounted on said housing for closing said switch means to energize said heating means and heat the outer surface of said first tip portion;
m. high voltage generating means connected between said terminals and said first tip portion;
h. a normally open high voltage switch connected between said terminal and said high voltage generating means;
o. a high voltage actuator mounted on said housing for closing said high voltage switch to apply high voltage to said first tip portion; and
p. means for imparting a mechanical shock to a patient's tooth through said second tip portion.

3,841,312
ELECTRODE ARRANGEMENT
Eugene Corasanti, New Hartford, N.Y., assignor to Consolidated Medical Equipment Inc., Utica, N.Y.
Filed Mar. 29, 1973, Ser. No. 346,154
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **5 Claims**



1. An electrode arrangement for use as a probe for sensing heart beats comprising, in combination, an electrode including a generally circular base flange and a solid integral upstanding central post, said base flange and solid integral upstanding central post being coated with conductive silver, gel pad means covering the bottom surface of the base flange and extending outwardly beyond the outer periphery of said flange, an adhesive pad having a central aperture receiving said central post, said adhesive pad being disposed adjacent the upper surface of said base flange, and retainer means having a central aperture receiving said central post and retaining said adhesive pad on said electrode below said retainer means and above said base flange, said gel pad being maintained in contact with the base flange of said electrode by adherence between the outer peripheral portions of the gel pad and the adhesive pad, the adhesive pad extending peripherally outwardly beyond the gel pad for adherence with the skin of a patient, the upper end of said central post being electrically exposed on the upper end portion thereof above said retainer means so as to be adapted to be directly connected with the electrode connector of an EEG or ECG system.

3,841,313
STROKE VOLUME METER
Karel Hendrik Wesseling, and Benjamino De Wit, both of Utrecht, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 29, 1973, Ser. No. 346,054
Claims priority, application Netherlands, Apr. 5, 1972, 7204522
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **11 Claims**



1. A stroke volume meter comprising, input means adapted to receive a signal that is proportional to the aorta blood pressure, means for deriving a first signal determined by the instant at which the blood pressure in the aorta reaches a first minimum value corresponding to the end diastolic aorta pressure and determined by the instant at which said blood pressure reaches a second minimum value corresponding to the incision, means responsive to the blood pressure signal for deriving a second signal determined by the value of the end diastolic aorta pressure, integration means responsive to the blood pressure signal and the second signal and adapted to integrate the blood pressure signal indicative exclusively of the part of the blood pressure in the aorta which exceeds the end diastolic aorta pressure from the instant at which this pressure is reached until the instant at which the incision is reached, and means for dividing the signal value obtained by said integration by an adjustable constant.

3,841,314
PULSE ACTIVITY INDICATOR
Robert E. Page, 3427 Dumas St., San Diego, Calif. 92106
Filed July 16, 1973, Ser. No. 379,508
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P **7 Claims**

1. A cardiovascular instrumentation system for measuring cardiovascular activity having a plurality of positive peaks comprising:
sensor means for generating an electrical analog signal of cardiovascular activity of a living subject;
a linear amplifier connected to said sensor means for increasing the power of said electrical analog signal;
first logic circuit means connected to said linear amplifier for producing a digital pulse signal having a pulse dura-

tion corresponding to the time of cardiovascular activity;

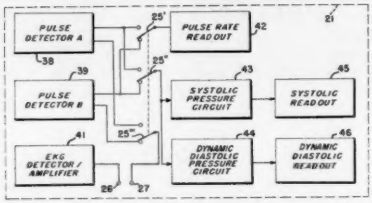
second logic circuit means connected to said first logic circuit means for producing a digital signal having a pulse duration corresponding to the length of time from the initiation of the cardiovascular activity to the first peak thereof;

a first measuring circuit means connected to said second logic circuit and to said linear amplifier for measuring the value of said amplified cardiovascular analog signal in response to the output of said second logic circuit means and connected to said first logic circuit means for enabling said first measuring circuit means to measure succeeding pulses;

a first display means connected to said first measuring for providing an indication of the measured value;

third logic circuit means connected to said first logic circuit means for generating a digital signal having a pulse duration corresponding to the length of time from the initiation of the cardiovascular activity to a second peak thereof;

a second measuring circuit means connected to said third logic circuit and to said linear amplifier for measuring the value of said amplified cardiovascular analog signal in response to the output of said third logic circuit means



and connected to said first logic circuit means for enabling said second measuring circuit means to measure succeeding pulses;

a second display means connected to said second measuring circuit means for providing an indication of the measured value;

a stabilized voltage source;

a trigger generator circuit connected to said first logic circuit means for generating a pulse in response thereto;

a first switch means connected to said trigger generator circuit and to said stabilized voltage source for timely switching said voltage in response to the trigger pulse;

a capacitor connected to said first switch to be charged to the stabilized voltage upon operation of said first switch means;

a plurality of resistances connected to said capacitor to serve as a discharge path therefor;

a plurality of switch means, each connected to one of said plurality of resistances and effectively connected to said capacitor to complete the discharge path; and

fourth logic circuit means connected between said trigger circuit means and said plurality of switches for sequential energization of each switch.

3,841,315
METHOD AND APPARATUS FOR CONTINUOUSLY MONITORING HEARTBEAT RATE

Keith A. Kopp, Bensenville, Ill., assignor to Eagle Monitor Systems, Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 341,158
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F **14 Claims**

1. A cardiac rate monitor for continuously monitoring the heartbeat rate of the wearer, said monitor including an alarm device for alerting said wearer whenever a maximum desirable heartbeat rate is exceeded, said monitor comprising:

means for monitoring said heartbeat of said wearer, said means including pulse means for generating output pulses substantially coincident with corresponding ones of said heartbeats monitored by said monitoring means;

averaging means coupled to said pulse means for averaging said output pulses to develop an averaged signal having an amplitude level directly proportional to said heartbeat rate;

comparator means coupled to said averaging means for selectably establishing a maximum threshold level corresponding to said maximum desirable heartbeat rate, said comparator means applying a drive potential to said alarm device whenever said averaged signal exceeds said maximum threshold level; and

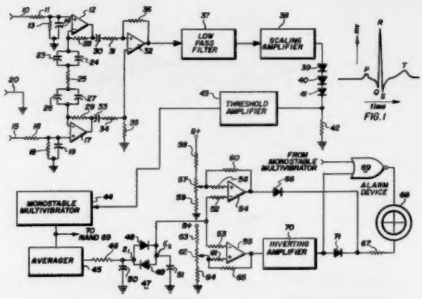


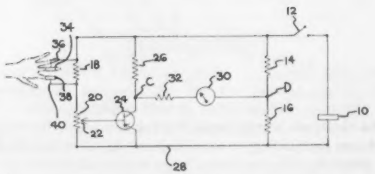
FIG. 1

gating means having an input coupled to said pulse means and an output coupled to said alarm device, said gating means disabling said alarm device during intervals between said output pulses and enabling said alarm device to generate an alarm signal responsive to said drive potential only during intervals corresponding to said output pulses thereby causing said alarm device to generate a repetitive alarm signal occurring at a rate coincident with said heartbeat rate whenever said averaged signal exceeds said maximum threshold level.

3,841,316
APPARATUS FOR MEASURING THE PSYCHOGALVANIC REFLEX

Richard W. Meyer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 26, 1973, Ser. No. 335,809
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z **1 Claim**



1. Apparatus having automatic meter overload protection for measuring the psychogalvanic reflex in human beings comprising, in combination:

a. a voltage source;

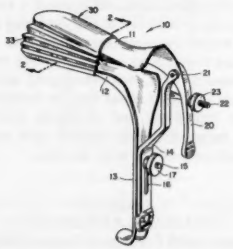
b. a switch connected in series with said voltage source;

c. a first resistor connected in parallel with said voltage source;
d. a second resistor, connected in series with said first resistor and connected to said voltage source;
e. a third resistor connected in parallel with said first and second resistors;
f. a variable resistor, connected in series with said third resistor, having a variable voltage tap connection;
g. a transistor with a base, a collector and an emitter, having its base connected to said variable voltage tap and its emitter connected to said voltage source;
h. a fourth resistor, connected in parallel with said first and second resistors and connected to the collector of said transistor;
i. a galvanometer type meter connected between the collector of said transistor and a circuit node located between said first and second resistors;
j. a fifth resistor connected between the collector of said transistor and said meter; and
k. electrode means for engaging the skin of a person to sense the resistance of the skin of said person and connected to form a resistance in parallel with said third resistor.

3,841,317
HEAT-INSULATING SHIELD FOR SPECULUM

George M. Awais, 2300 Overlock Rd., Apt. 719, Cleveland Heights, Ohio 44106

Filed Dec. 18, 1972, Ser. No. 316,051
Int. Cl. A61b *1/30*
U.S. Cl. 128—17 **19 Claims**



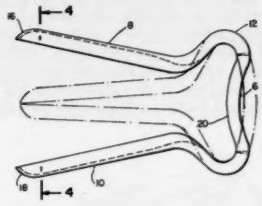
1. In combination, a medical speculum for dialating the vagina of a patient during such procedures as cauterization of the cervex, comprising a pair of dilatory blades having overlying side edge regions and being coupled together for relative movement between an insertion position wherein the blades are positioned relatively closely together, and a dilation position wherein the blades are relatively widely spaced one from another, and heat insulating means including a heat insulating material extending across the space between said overlying side edge regions of the dilatory blades for minimizing the radiant transfer of heat to regions of the patient which would otherwise be exposed between the blades.

3,841,318
VAGINAL SPECULUM

Donald M. Olson, Oakland, Calif., assignor to Max Morris, San Jose and Earl L. Kirkman, Felton, both of, Calif., part interest to each

Filed Oct. 30, 1972, Ser. No. 302,195
Int. Cl. A61b *17/02*
U.S. Cl. 128—20 **9 Claims**

1. A U-shaped vaginal speculum comprising a web end wall, legs resiliently and integrally formed in one piece with said end wall, said legs extending substantially transversely from said end wall and normally diverging angularly each from the other in the unstressed condition, said legs and end wall being constructed of spring material so that said legs are resiliently movable to a generally parallel relationship without any permanent deformation, and said end wall including an arcuate

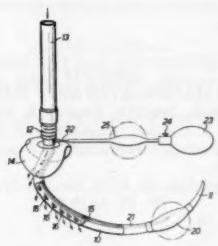


portion normally curved inward toward said legs in the unstressed condition, and said arcuate portion having an aperture therethrough constituting means providing examination and operating access.

3,841,319
METHOD FOR SEALING THE OESOPHAGUS AND PROVIDING ARTIFICIAL RESPIRATION

Tantrimudalige Anthony Don Michael, SQ. 1044, Braim, Abadan, and Edward Henry Lambert, SQ. 1697, Abadan, both of Iran

Division of Ser. No. 867,697, Oct. 20, 1969, Pat. No. 3,683,908. This application June 22, 1972, Ser. No. 266,514
Int. Cl. A61m *16/00*
U.S. Cl. 128—28 **4 Claims**



1. A method for applying artificial respiration while permitting washing out, dosing or voiding the stomach,
said method comprising,
introducing into a patient's oesophagus an elongated element having an expandible blocking means for blocking the oesophagus with a tube coextensive with said elongated element passing through said blocking means to the patient's stomach and said elongated element having means for supplying air for resuscitation through said patient's mouth to the respiratory passages of said patient,
expanding said blocking means to block said oesophagus
supplying air to said respiratory passages for resuscitation without passage of air to said stomach,
washing out, dosing or voiding said stomach by means of said tube.

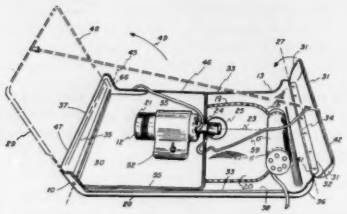
3,841,320
KINESITHERAPY APPLIANCE

James T. Brown, Jr., 3808 Harbour Dr., Orlando, Fla. 32806

Filed Aug. 30, 1973, Ser. No. 392,981
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **7 Claims**

1. A kinesitherapy appliance comprising a first vibrator device having a casing for housing an electric motor which is

energizable to impart vibratory motion to the casing, a second vibrator device having a generally flat pad and a casing which is secured to the pad and houses an electric motor that is energizable to impart vibratory motion to the pad, a support structure for the vibrator devices which includes a rigid base panel member having opposite ends and a flat horizontally arranged bottom portion therebetween, and a rigid end panel member that is hinged to said base panel member for pivotal movement about a horizontal pivot axis located at one of said opposite ends, said pad being supported by and resting horizontally upon said bottom portion, said end panel member



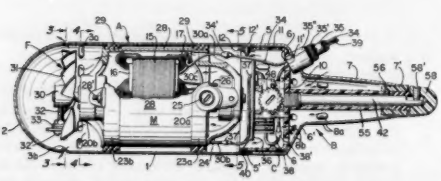
being pivotally movable between a first position at which said pad is sandwiched between said end panel member and said bottom portion, and a second position at which said end panel is arranged generally upright with respect to said bottom portion, said appliance further comprising means attached to said end panel member for biasing said end panel member toward its first position when the end panel member is at its second position, and the casing of said first vibrator device being rigidly secured to and pivotally movable with said end panel member.

3,841,321

HAND MANIPULATED BODY MASSAGER

Robert W. Albach, Dunkirk; Kenneth R. Mathers, Brocton, and Reuben T. Carlson, Jamestown, all of N.Y., assignors to Niagara Therapy Manufacturing Corporation, Village of Brocton, N.Y.

Filed June 22, 1973, Ser. No. 372,609
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **12 Claims**



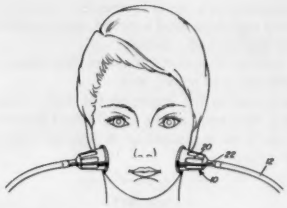
1. A therapeutic massager adapted to be held in the hand and applied to selected portions of the human form which includes, a container part having a tubular body wall closed at one end by a hemispherical end wall, a vibration producing motor fully contained and supported within said container part; a separable cover part presenting a tubular nose extension having an outwardly flared end wall portion which merges through a shoulder portion into a tubular flange, a solid state motor speed control assembly contained in said cover part, means for supporting said speed control assembly within the tubular flange and tubular nose extension of said cover part, detachable leads for connecting said speed control assembly in series with one of the power input leads and one of the winding input leads from the motor, an element connected to said speed control assembly for controlling the speed of the motor and accessible for finger manipulation exteriorly of said nose extension; and means for rigidly securing the tubular flange of said cover part with the motor speed control circuit assembled therein, to the free end of said container part.

3,841,322

APPLICATOR FOR PNEUMATIC THERAPY

Peter N. Spelio, P.O. Box 5857, Encino, Calif. 91413

Filed Jan. 2, 1973, Ser. No. 320,121
Int. Cl. A61h *1/00*
U.S. Cl. 128—40 **12 Claims**



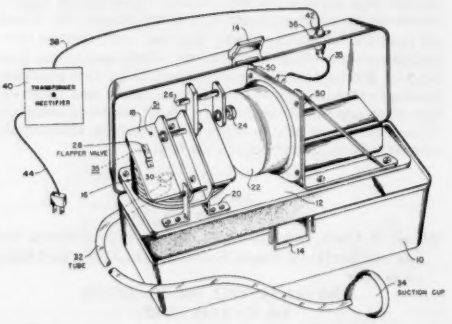
1. A device for applying cyclic suction-relaxation manipulative action to the skin comprising a generally frusto-conical shell having major and minor diameter open ends; a plurality of recesses in said shell extending between said ends; a conical end portion on the minor diameter end of said shell, an opening in the apex of said conical end portion; a nipple extending outwardly from the periphery of said opening and connector means on said nipple for connecting tubing to said shell; said connector means comprising a sleeve having one end thereof telescopingly housing and snugly engaging said nipple and a reduced external diameter other end for insertion within said tubing; and an outwardly and reversely curved peripheral flange on the major diameter end of said shell to form a rounded surface for contact with the skin.

3,841,323

MASSAGE APPARATUS

Dan T. Stoughton, 6220 Coldwater Canyon, North Hollywood, Calif. 91606

Filed July 23, 1973, Ser. No. 381,743
Int. Cl. A61h *1/00*
U.S. Cl. 128—40 **8 Claims**



1. Massaging apparatus including: a base; a bellows mounted on said base; a treadle mounted on said base in engagement with said bellows; an electric motor mounted on

said base and having a drive shaft; a crank linkage means coupling the drive shaft of said electric motor to said treadle to move said treadle reciprocally and cause said bellows cyclically to compress and expand; a suction cup member; and a tubular member intercoupling said cup member to the interior of said bellows.

3,841,324

TRANSPORTER FOR CONVEYING LARGE LIVING ORGANISMS UNDER SUBSTANTIALLY STERILE CONDITIONS

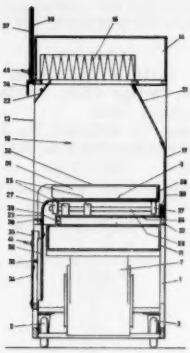
Franciscus Josephus Kruiswijk, Delft, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van De Volksgezonheld, The Hague, Netherlands

Filed Dec. 15, 1972, Ser. No. 315,311

Claims priority, application Netherlands, Dec. 24, 1971, 7117822

Int. Cl. A61b *19/00;* **B01d** *46/00*

U.S. Cl. 128—132 **7 Claims**



1. A transporter for conveying a large living organism under substantially sterile conditions, in particular a germ free stretcher for patients in serious condition, comprising

a. top, bottom, rear and side walls defining a space for accommodating said organism; said space having, opposite said rear wall, a front side through which said organism is movable into and out of said space;

b. fan means mounted on said transporter externally of said space for generating an air stream;

c. means for filtering the air in said air stream;

d. means for directing said filtered air stream through said top wall in a laminar flow across said space;

e. a horizontally disposed carrying plate having a front edge and a rear edge; said carrying plate extending substantially coextensively with and adjacent to said bottom wall;

f. guide means for horizontally slidably supporting said carrying plate, whereby the latter is movable into and at least partially out of said space through the front side thereof; and

g. a folding bellows mounted between and attached to said rear wall and the rear edge of said carrying plate.

3,841,325

PROTECTIVE EAR COVERING

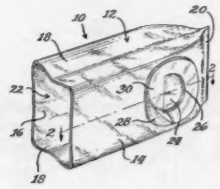
Robert E. Pickard, 3730 Irvington Ave., Miami, Fla. 33133

Filed Sept. 27, 1971, Ser. No. 184,047

Int. Cl. A61f *11/00*

U.S. Cl. 128—151 **1 Claim**

1. A protective ear covering to be applied over the ear after ear surgery, said protective ear covering comprising an elongated bag-like member of a flexible soft material impervious to water, said elongated bag-like member including side and end walls and closed at the inner end of the bag and open at the opposite outer end, a generally D-shaped opening in one of said side walls adjacent the closed inner end of the bag to receive the outer ear and position the ear within the bag, the inner edge of said D-shaped opening being flush, with its side wall and with no portion of said inner edge extending into the interior of the bag, the outside surface of the side wall adjacent the D-shaped opening having an adhesive surface configured to the D-shaped opening, a D-shaped protective strip removably covering said adhesive surface which when removed permits the adhesive surface of the bag to be secured against the area of the head surrounding the ear so that the bag remains attached to the ear during the healing period, said bag being so flexible and pliable as to permit it to be manipulated so that the bag may be positioned at substantially right angles to the ear and in direct alinement with the interior of the ear to permit the attendant to examine the interior of the ear with the bag attached to the ear, said outer open end of the bag adapted to be closed during the healing period and capable of being opened for examination of the ear.



3,841,326

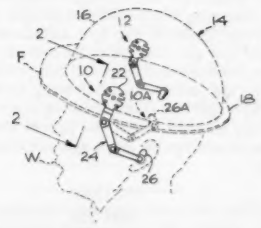
HARD HAT EAR PROTECTOR

Howard S. Leight, 16027 N. Field St., Pacific Palisades, Calif. 90272

Filed Apr. 2, 1973, Ser. No. 346,747

Int. Cl. A61f *11/00*

U.S. Cl. 128—152 **4 Claims**



1. Protective apparatus comprising:

a helmet (**14**) with opposite sides and a rim (**18**);

a pair of mounts (**22**) mounted on either side of the helmet at the inside surface thereof;

a pair of inner bars (**42**), each having an inner end (**46**) pivotally mounted on one of said mounts and an outer end (**50**);

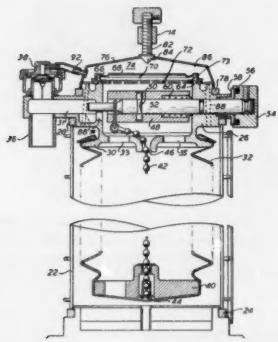
a pair of outer bars (**44**), each having an inner end (**48**) pivotally mounted on the outer end of a corresponding inner bar, and each outer bar having an outer end (**52**); and

a pair of earplugs (**26**), each mounted on the outer end of a corresponding outer bar;

said mounts and bars constituting means permitting flexible movement of said earplugs to permit the earplugs to move

between a use position below the rim and against the ears, and a stowage position above the rim.

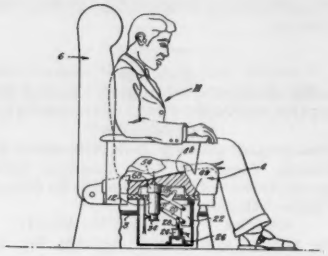
3,841,327
ANESTHESIA VENTILATOR APPARATUS
Wayne W. Hay, Madison, Wis., assignor to Airco, Inc., New York, N.Y.
Filed July 2, 1973, Ser. No. 376,075
Int. Cl. A61m *16/00*
U.S. Cl. 128—188 **5 Claims**



1. In anesthesia ventilating apparatus of the type including a patient breathing circuit; a bellows in said breathing circuit adapted to expand and contract to cycle gas to the patient circuit, a bellows chamber surrounding said bellows; a pneumatic powering system for cyclically pressurizing said chamber to cause the expansion and contraction of said bellows; and a highly flexible diaphragm mounted intermediate the said patient circuit and said pneumatic powering system and adapted to be displaced by a negative pressure signal from said patient circuit to effect a negative pressure signal to said pneumatic powering system for triggering cycling of said pneumatic system; the improvement comprising a diaphragm chamber containing said flexible diaphragm, said diaphragm separating said chamber into first and second separate gas spaces, said first gas space being located above said flexible diaphragm and communicating with said pneumatic powering system, and said second chamber being located below said flexible diaphragm and communicating with said patient circuit whereby moisture within said patient circuit collects on the bottom of said flexible diaphragm and drains downwardly therefrom.

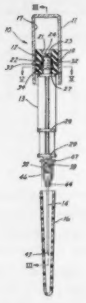
3,841,328
AIRPLANE HIJACKING INJECTOR
Jack Jensen, 6325 Woodbine Dr., Fort Worth, Tex.
Filed Aug. 4, 1972, Ser. No. 278,008
Int. Cl. A61m *5/20*
U.S. Cl. 128—218 F **8 Claims**

1. Injector apparatus comprising, a general frame; a rigid sheet having an opening extending therethrough; means to secure said rigid sheet to said frame; a door; means to moveably secure said door to said rigid sheet; a resilient cushion supported by said rigid sheet; link means pivotally secured relative to the frame; bumper means on said link means to move said door relative to said rigid sheet; a hypodermic syringe having a plunger slidably disposed therein; a hollow needle attached to said hypodermic syringe, said plunger being arranged to force fluid through said hollow needle; means securing the syringe to said link means; means to pivot the link means relative to the frame such that the bumper engages the door and the needle is urged through the resilient



cushion; and means to move the plunger to eject fluid through the hollow needle.

3,841,329
COMPACT SYRINGE
Fred M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Sept. 11, 1972, Ser. No. 287,661
Int. Cl. A61m *5/24, 5/22*
U.S. Cl. 128—220 **4 Claims**



1. A syringe for dispensing a liquid medicament, comprising:

hollow cylindrical barrel means having a closed axial end and an open axial end;

elastomeric piston means sealingly and slidably disposed within said barrel means for movement lengthwise thereof, said piston means having a central opening therethrough in a direction substantially parallel with the direction of movement of said piston means;

closure means yieldably obstructing the flow of liquid from said barrel means, said closure means comprising a membrane integral with said piston means and extending across said opening, said membrane having a slit therethrough;

elongated rod means having an end portion adjacent one end thereof extending into and firmly held within said opening in said piston means, said rod means having a central passageway therethrough and being longer than said barrel means, whereby said rod means projects outwardly through the open axial end of said barrel means;

one-way gripping means coacting between said end portion and said piston means

1. for preventing relative rotation between said end por-

tion and said piston means in one rotational direction to thereby permit rotation of the rod means and the piston means relative to the barrel means to break loose any seizing that may occur between the piston means and the barrel means and

2. for permitting axial insertion of said end portion into said opening of said piston means while preventing said end portion from being axially separated from said piston means; said one-way gripping means including projection means fixed to said end portion and projecting radially outwardly therefrom for distorting the portion of said piston means defining the opening therethrough, the axial end face of said projection means which faces away from the other end of said rod means being formed with an inclined surface thereon which slopes downwardly and outwardly toward said other end of said rod means to facilitate axial insertion of said rod means into the opening formed in said piston means, the other axial end face of said projection means extending outwardly substantially radially relative to the longitudinal axis of said rod means for preventing said rod means from being axially separated from said piston means; and laterally projecting grip means on said rod means near the other end thereof.

3,841,330

METHOD AND APPARATUS FOR BATHING BODY CAVITIES

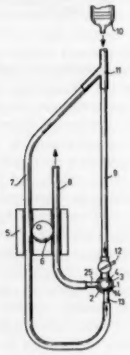
Karl Storz, Hermannstrasse 14, 72, Tuttlingen, Germany

Filed Jan. 15, 1973, Ser. No. 323,654

Claims priority, application Germany, May 16, 1972, 2223760

Int. Cl. A61m *1/00*

U.S. Cl. 128—230 **1 Claim**



1. In combination, an endoscope or similar apparatus for operating in a body cavity comprising a substantially hollow shaft having first and second conduit means extending between the proximal and distal ends respectively for the delivery and withdrawal of fluid from said body, and tubular pump means comprising a flexible hose extending respectively from said delivery and withdrawal conduit means and a rotary eccentric actuator acting thereon for simultaneously pumping an equal volume of fluid through said first and second conduit means to and from said body.

3,841,331

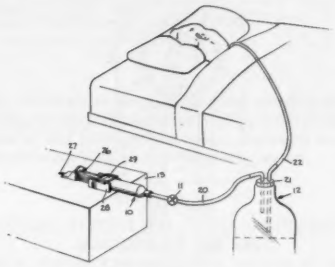
SUCTION-PUMP ASSEMBLY FOR DRAWING BODY FLUIDS

Joseph R. Wilder, 151 W. 86th St., New York, N.Y. 10024, and Maurice S. Kanbar, 34 W. 13th St., New York, N.Y. 10011

Filed Nov. 17, 1972, Ser. No. 307,459

Int. Cl. A61m *1/00, 5/20*

U.S. Cl. 128—278 **4 Claims**



1. A disposable pump assembly for evacuating fluid from the body of a patient or for infusing fluid into said body, said assembly and the driver therefor comprising:

A. a bottle for containing a fluid to be infused into the body or for receiving fluid evacuated from the body, said bottle being provided with first and second inlets, said first inlet communicating with an air space in said bottle, said second inlet functioning with respect to infused or evacuated fluid,

B. a pipe connected to said second inlet for coupling said bottle to said body for infusion or evacuation;

C. a disposable, standard syringe functioning as an air pump and constituted by a cylinder having an outlet and a movable piston therein, said piston being actuated by an axial stem connected thereto,

D. a powered driver having a stationary fitting and a movable fitting which reciprocates with respect to said stationary fitting, said fittings including means effecting a detachable coupling to said cylinder and to said stem whereby said syringe may readily be coupled to said fittings or withdrawn therefrom, and

E. pipe means having a reversible uni-directional valve interposed therein coupling the outlet of the syringe to said first inlet, said assembly being operative in the evacuating mode when said valve functions in a predetermined direction and being operative in the infusion mode after the valve setting is reversed when said valve functions in the reverse direction.

3,841,332

ENTEROSTOMY DRAINAGE APPLIANCE

Dennis L. Treacle, 7314 Beverly Dr., N.E., North Canton, Ohio 44721

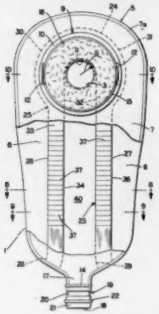
Filed Nov. 19, 1973, Ser. No. 417,247

Int. Cl. A61f *5/44*

U.S. Cl. 128—283 **11 Claims**

1. An enterostomy drainage appliance of the type having a flexible bag with at least front and back walls forming a fluid collection chamber therebetween, in which a stoma-receiving opening is formed in the upper end of the back wall, and in which means are provided for mounting the bag on the body of a patient and for sealing the back wall opening with respect to a stoma; the improvement including, flexible rib means having a generally elongated inverted U-shaped configuration mounted on the front bag wall and located within the collection chamber; said rib means comprising a pair of spaced straight leg portions extending longitudinally within the col-

lection chamber and terminating at their upper ends in an integral curved portion to form the U-shaped configuration; fluid drainage channel means being formed between and by said leg and curved rib portions; the curved rib portion being located adjacent the upper bag end substantially opposite the stoma-receiving opening and substantially surrounding said stoma-receiving opening when the front wall is pressed to-



wards the back wall; and said stoma-receiving opening communicating with the channel means within the curved rib portion when the rib means is pressed against the rear wall to prevent sealing of the stoma-receiving opening by the bag front wall and to provide a continuous open drainage channel extending from the stoma-receiving opening generally throughout the length of the collection chamber between the straight leg portions.

3,841,333

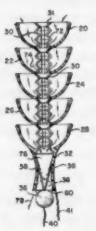
MENSES COLLECTOR

Kazimierz Zalucki, 7 Holyoke St., Easthampton, Mass. 02027

Filed Jan. 7, 1974, Ser. No. 431,543

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **18 Claims**



1. A menses collector, comprising:

a. a plurality of superposed cups made of pliable material dimensioned to fit within the vaginal cavity,

b. a central collecting conduit extending axially of the cups and integrally connected thereto,

c. an inlet port associated with each of the cups to permit the contents thereof to drain into the central collecting conduit,

d. discharge valve means disposed at the lower end of the central collecting conduit for permitting drainage of menstrual fluid from the conduit while the collector is in position within the vagina.

3,841,334

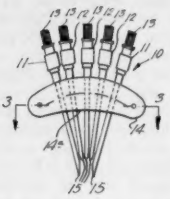
EMERGENCY NEEDLE AIRWAY

Earl G. Wolf, 1750 N. Palafox St., Pensacola, Fla. 32501

Filed Feb. 16, 1973, Ser. No. 333,066

Int. Cl. A61b *17/34*; **A61m** *25/00*; **A61b** *17/24, 19/02*

U.S. Cl. 128—305 **8 Claims**



1. An emergency airway kit for relieving laryngeal obstruction in human beings comprising in combination:

a. guide means including a plurality of passageways therein; and

b. a hollow pointed open-ended needle slidably engaged in each of said passageways.

3,841,335

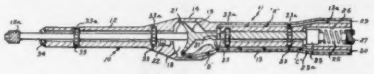
PNEUMATIC RECIPROCATING SURGICAL SAW AND FILE

John J. Tarsitano, USAF Hospital, Box 305, APO New York, N.Y. 09220

Filed Jan. 31, 1973, Ser. No. 328,156

Int. Cl. A61b *17/14*

U.S. Cl. 128—317 **4 Claims**



1. A hand-held, reciprocating and pneumatically-operated, surgical instrument device for cutting, filing and sectioning of bone during surgical operations, comprising; a main, open-ended and elongated, enclosure member grippable by the human hand, and incorporating a plurality of bearing-supporting means, a relatively enlarged cylinder positioned in intermediate relation therewithin, and an elongated and axially-oriented passage having forward and rear passage portions extending in opposite and communicating relation from said cylinder to opposite open ends; a combined, elongated surgical instrument-supporting-and-operating rod member having a pneumatically responsive, relatively thin and substantially disc-like piston integrally formed in an upright relation thereon and further extending radially outward in all directions from the axis of said rod member, and disposed for adjustable reciprocatory movement in said cylinder and further dividing said rod member into a first, forwardly-oriented, rod member-portion extending in overlapping relation out of a front end opening of said cylinder and rigidly supporting a surgical instrument device on and as an extension of the frontmost end thereof, and a second, rearwardly-oriented, rod member-portion extending to a rearmost end rigidly supporting thereon a relatively enlarged, spring-abutment and receiving element, said rod member being supported for slidable and reciprocating movement only in said elongated and axially-oriented passage by said bearing-supporting means; a relatively enlarged, enclosure member-aft end portion having a flexible, outer tube releasably attached thereto and being common to, and adapted to house both compressed gas inlet and exhaust gas outlet tubes in parallel relation to each other;

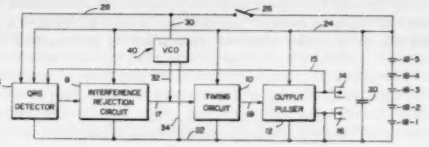
first, pneumatically-operated, gas escapement-power means including a first, relatively elongated, compressed gas inlet passage formed in said main enclosure member-aft end portion in open communication with the compressed gas inlet tube for receiving compressed gas therefrom at the rear end thereof and further extending in a forward direction in a substantially parallel relation to the elongated, axially-oriented passage to terminate in a relatively short and inwardly-turned, compressed gas-inlet passage portion and open end adjacent to said rod member; an opening extending through the diameter of said rod member comprising a second, relatively short, compressed gas inlet passage disposed with one end thereof in exact alignment and thus open communication with the relatively short and inwardly-turned compressed gas inlet passage portion of said first, relatively elongated, compressed gas inlet passage when said rod member and piston are in their forward stroke or rest position, and a third, relatively elongated, compressed gas inlet passage extending in open communication at one end thereof between said second, relatively short, compressed gas inlet passage formed in said rod member and the said cylinder forward of said piston to thereby provide a compressed gas flow automatically acting against the front side of said piston to drive it and the attached rod member and surgical instrument device in a rearward stroke-direction, and simultaneously therewith misaligning the previously opened communication between said first and second compressed gas inlet passages to cut off the flow of compressed gas into the cylinder and forcing the gas on the aft side of the piston out of the cylinder; a relatively elongated, exhaust gas outlet passage formed in said main enclosure member and the aft end portion thereof in substantially parallel relation to said first-named, compressed gas inlet passage, and in open communication between the exhaust gas outlet tube at the rear end thereof and the cylinder at the front end thereof to thereby automatically receive and exhaust the gas being forced out of the cylinder by the rearward stroke of said piston; and a second, resiliently-operated, gas escapement-power means comprising; a return spring positioned in a centrally-disposed chamber incorporated in said enclosure member-aft end portion, and being restrained between a screw adjustment means in the aft end wall of said enclosure member and the spring-abutment and receiving element on the aft end of the rod member, and further separating said first-named, compressed gas inlet passage from said exhaust gas outlet passage, and being automatically and initially compressed and thereby energized by the compressed gas-operated, rear stroke-movement of said rod member and piston to immediately thereafter force and return the now-compressed gas-freed, rod member, and attached piston and surgical instrument device in a forward stroke-direction to thereby force any air remaining in the cylinder on the forward side of the piston around said piston for its exhaustion through said exhaust gas outlet passage, the said rod member and attached piston and surgical instrument device being thereby continually reciprocated in the said rearward and forward-stroke direction until the main compressed gas supply being utilized is either exhausted or cut-off.

3,841,336
PACER BATTERY FAILURE DETECTION CIRCUIT

Richard F. Daynard, Chelmsford, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 14, 1973, Ser. No. 425,036
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 D **8 Claims**

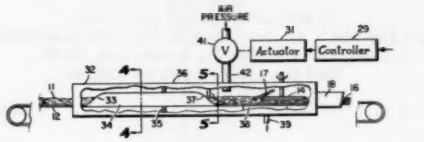
1. An implantable heart pacer comprising a plurality of serially connected batteries, electrode means for connection to a patient's heart, pulser means for generating and applying stimulating pulses to said electrode means, first timing means for operating continuously and repetitively and for controlling the generation of stimulating pulses at predetermined time intervals after the resetting thereof, said batteries serving to power said pulser means and said first timing means, second timing means for operating in repetitive cycles and including means for resetting said first timing means following each of said repetitive cycles, said second timing means being powered by said batteries when enabled and including means for shortening its cycle of operation in proportion to the series potential of said batteries, and means responsive to external actuation for enabling said second timing means.



3,841,337
CONTROL SYSTEM FOR A CIGARETTE MAKING MACHINE OR THE LIKE

Donald E. Varner, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Jan. 27, 1961, Ser. No. 85,426
Int. Cl. A24b *05/34*
U.S. Cl. 131—21 B **2 Claims**



1. In an industrial processing system using compressible material to form a product and including a conveyor for said material, and means for feeding an amount of said material to said conveyor in excess of that required to form the product, the material on said conveyor having a free surface, a control system for controlling the quantity of said material used in forming said product, said control system comprising separating means for separating said material into a first portion of predetermined cross section and a second portion containing the excess, adjustable means comprising an air jet of adjustable magnitude for pressing the free surface of said material with a pressure exceeding atmospheric pressure toward said conveyor ahead of said separating means thereby controlling the density of said material as conveyed to said separating means, means for feeding said separated first portion to form said product, detecting means for detecting the quantity of said material in said product, and means responsive to said detecting means for controlling said adjustable means in accordance with the quantity of said material detected to maintain said quantity constant.

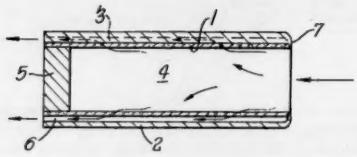
3,841,338
TOBACCO-SMOKE FILTERS

Henry George Horsewell, and John Anthony Luke, both of Southampton, England, assignors to British-American Tobacco Company Limited, London, England

Continuation of Ser. No. 165,686, July 23, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,249
Int. Cl. A24d *01/04*; **A24f** *07/04*
U.S. Cl. 131—261 B **3 Claims**

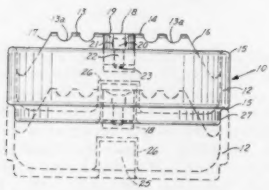
1. A cigarette filter for tobacco smoke comprising a porous tube of thin-walled filter paper and an external supporting one piece tubular case of plastics material, within which the tube

extends longitudinally, the case being formed with longitudinal internal ribs extending over substantially its whole length by which the tube is directly contacted and supported throughout its length in substantially annular spaced relation with respect to the case, spaces within the tube and between it and the case having closures at opposite ends, the closure at one end being an annular seal between the rim of the case and the rim of the tube which is constituted by an inturned lip



formed from the plastics material of the case and fused to the tube, whereby smoke is prevented from passing between the case and tube at one end, and the closure at the other end being in the form of a plug mounted in the other end of the tube to prevent smoke from passing through the outer end of the tube so that smoke entering the filter at one end is constrained to pass substantially radially through the filter-paper tube before reaching the other, outlet, end.

3,841,339
STACKABLE SAFETY ASH TRAY
J C Fox, 960 S. Arbutus, Lakewood, Colo. 80228, and Elbert A. Delay, 10155 W. 74th Pl., Arvada, Colo. 80004
Filed Jan. 19, 1973, Ser. No. 325,146
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R **5 Claims**



1. A stackable safety ashtray comprising:

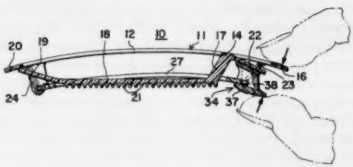
a. a generally dish-shaped body means having a substantially flat base means and upwardly extending side wall arranged continuously around the outer perimeter of said base means so as to form an open interior cavity within said body means, the outer surface of said sidewall being arranged generally perpendicular to said base means, said sidewall having parallel upper and lower edges and the upper edges of said sidewall lying in a plane which is generally parallel to said base means,

b. a barrier means disposed across the interior cavity of said body means and attached to the inside surface of said sidewalls, the intermediate portion of said barrier means being arranged to extend above the upper edges of said sidewalls and including cigarette holding means for resting a lighted cigarette so that both ends are positioned over the interior cavity of said body means to prevent the cigarette from falling outside of the sidewalls of the ashtray, the end portions of the barrier means being sloped downwardly so that the upper surface of said barrier means intersects the sidewall at a point which is substantially below the upper edge of said sidewall to prevent a lighted cigarette from being positioned between the barrier means and said sidewalls,

c. at least one cigarette snuffing means attached to the side of the intermediate portion of said barrier means and arranged for extinguishing a lighted cigarette which is merely inserted therein, and

d. recessed means formed in the undersurface of said body means to permit similar ashtrays to be stacked, said recess means including means providing a recessed cavity formed in the bottom surface of said base means and a recessed notch formed around the perimeter of the lower edge of said sidewalls, said recessed cavity means being separated from said recessed notch means, said recessed cavity means being shaped to receive the upper intermediate portion of the barrier means of a similar ashtray, said recessed notch being sized to fit the upper edge of the sidewall of a similar ashtray whereby a plurality of ashtrays can be stacked with the edges of the sidewalls telescoped to form a seal around the upper edge of the body means of the lower ashtrays so that the interior cavity of each of the lower stacked ashtrays is substantially sealed to exclude air and extinguish any burning materials that may be present in the interior cavities.

3,841,340
HAIR CLASP DEVICE
Nathan L. Solomon, Cedar Ln., Englewood, N.J. 07631
Continuation of Ser. No. 165,018, July 22, 1971, abandoned. This application Nov. 7, 1972, Ser. No. 304,309
Int. Cl. A45d *8/24*
U.S. Cl. 132—48 A **4 Claims**



1. A hair clasp device comprising:

A. a unitary formed base unit, injection molded of a resilient synthetic organic polymeric resin and including:

1. a longitudinally extending front base member,

2. first and second pairs of transversely spaced rearwardly directed ears located proximate opposite ends of said base member,

3. a first longitudinally extending cantilevered resilient clamp arm positioned rearwardly of said base member and having a fixed end integrally formed with said base member at a point inwardly of said first pair of ears and the other end freely extending between said second pair of ears, and

4. a resilient cantilevered spring arm having an end integrally formed with said base member between said first clamp arm fixed end and said first pair of ears and extending rearwardly and outwardly to between said first pair of ears;

B. a second longitudinally extending arm having one end pivoted between said second ears for swinging into and out of clasping relationship with said first clamp arm and terminating at its free end and in a locking element, said free end of said first arm engaging said pivoted end of said second arm for urging said second arm into a spaced apart, non-clasping position with said first arm;

C. a locking member rotatably supported by and between said second ears for rocking about a transverse axis to lock and unlock positions respectively on opposite sides of an intermediate equilibrium position and engaged and alternatively urged by said spring arm toward said lock

and unlock positions when disposed on corresponding sides of said equilibrium position;

and

D. said base member pivotable about said junction with said spring arm during said unlocking of said locking member.

3,841,341

COIN DISPENSING DEVICE

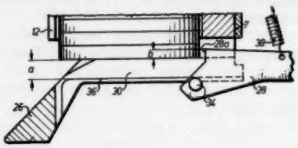
Gosta Roland Englund, Stockholm; Bjorn Sture Lundell, Alvsjo, and Claes-Goran Lindelow, Taby, all of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed June 12, 1972, Ser. No. 262,062

Claims priority, application Sweden, June 24, 1971, 8223/71

Int. Cl. G07d *1/00*

U.S. Cl. 133—4 **4 Claims**



1. A coin dispensing device comprising:

a plurality of coin tubes, each of which dispense one or more coins per cycle of operation,

a plurality of coin dispensing means, one for each coin tube and in operative relationship thereto, a portion of which engages with said one or more coins to be dispensed, said portions having a front vertical edge, each of said front vertical edges being of the same height, and a single adjusting flat member, in cooperative relationship to all of said coin tubes and all of said coin dispensing means, on which the lowermost coin in each coin tube rests, for varying the height of said portion of the coin dispensing means which is in contact with said one or more coins.

3,841,342

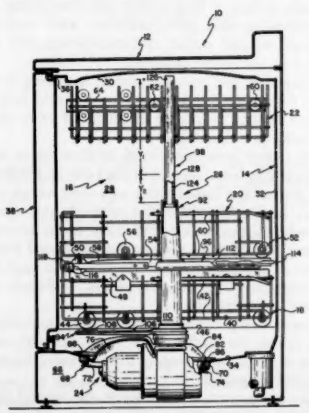
DISHWASHER AND SPRAY SYSTEM THEREFOR

Donald S. Cushing, and Thomas E. Jenkins, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1973, Ser. No. 320,614

Int. Cl. B08b *3/02*

U.S. Cl. 134—144 **11 Claims**



1. A dishwasher comprising a tub providing a wash chamber having an opening therein; a door for closing the opening; racks in the chamber; means mounting the racks for movement between washing and loading positions respectively in and at least partially out of the wash chamber; and spray means for distributing washing liquid toward the racks, the spray means comprising a stand pipe, a spray conduit having at least one upper and at least one lower spray opening providing generally oppositely directed spray paths, said lower spray opening being preselectively located in said spray conduit such that when washing liquid passes therethrough a restoring moment is produced on said spray conduit to counteract, at least in part, a similar moment produced when washing liquid passes through said upper spray opening; means mounting the spray conduit for generally vertical telescoping movement relative to the stand pipe between upper spray and lower inoperative positions in response to the delivery of pressurized washing liquid to the conduit, and seal means operative in the upper conduit position between the conduit and the stand pipe for reducing liquid leakage therebetween.

3,841,343

TELESCOPIC UMBRELLA

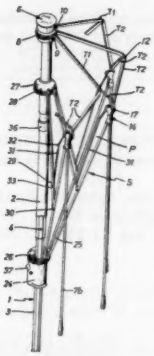
Heinz Seitel, Solingen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Oct. 19, 1973, Ser. No. 408,190

Claims priority, application Germany, Oct. 21, 1972, 2251773

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 R **5 Claims**



1. An umbrella having a frame, a stick, a crown at one end of the stick, at least one runner slidable on the stick, the frame including dome rib members, frame stretcher members connecting the rib members to the runner, a cover attached to the crown and dome ribs, spreader means foldable outwardly when the umbrella is being collapsed to spread and shape the cover into a mushroom shape, said spreader means comprising a first set of members pivotably connected to the crown, a second set of members pivotably connected to the rib members and each member of one of the first or second set of members being pivotably connected to two members of the other of the first or second set of members.

3,841,344

GAS MIXING SYSTEMS

Don S. Slack, Costa Mesa, Calif., assignor to Airco, Inc., New York, N.Y.

Filed June 6, 1973, Ser. No. 367,599

Int. Cl. G05d *11/03*; **F16k** *19/00*

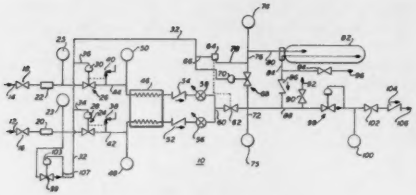
U.S. Cl. 137—88 **14 Claims**

1. A gas mixing system, comprising in combination:

a plurality of supply lines for different gases;

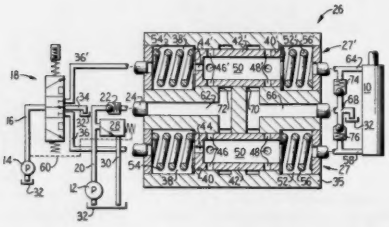
a metering valve in each supply line;

a confluence downstream of said metering valves, whereat said individual gases are mixed;
a controllable pressure regulator, positioned in each line upstream of said metering valve;
a delivery line, for supplying mixed gas from said confluence to a utilization point;
a controllable back pressure regulator, positioned downstream of said confluence, to thereby control back pressure across said metering valves;



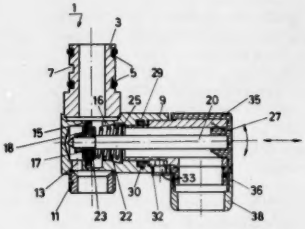
an accumulator tank adapted to receive and contain a portion of the mixed gases;
a pressure responsive switch connected to control the pressure in said accumulator tank by controlling feed of the mixed gases from said confluence to said tank to maintain said pressure in said accumulator tank within selected limits; and
control means connected to commonly control upstream pressure regulators and said back pressure regulator.

3,841,345
PILOT OPERATED CONTROL VALVE
John R. Cryder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 163,866, July 19, 1971, Pat. No. 3,739,690. This application Feb. 7, 1973, Ser. No. 330,459
Int. Cl. F16k *11/10*
U.S. Cl. 137—106 **7 Claims**



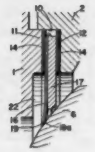
1. In a hydraulic valve for directional control of a hydraulic motor,
a valve body, the body defining a pair of axial bores each reciprocably housing a spool therein, the body further defining an inlet passage and an outlet passage, each intersecting the bores in axially spaced apart relation, and a pair of work ports for communication with the opposite sides of the hydraulic motor;
the spools being movable between a normal spring biased position blocking communication of the inlet and outlet passages with the work ports and first and second positions for respectively communicating the supply passage to one of the work ports and communicating the other work port with the outlet passage,
a first actuating means for moving one of the spools to its first position,
a second actuating means associated with the other spool responsive to displaced fluid flow from the motor to move the other of the spools to a position for unrestricted communication of the other work port with the outlet passage, the second actuating means being further responsive to flow of displaced fluid from the motor in excess of a predetermined amount to move the other spool out of its second position and progressively restrict communication between the work port and the outlet passage.

3,841,346
PIVOTABLE OUTLET INSERTABLE IN PLUMBING
Robert Amblank, Beinwil Am See, Switzerland, assignor to Aktiengesellschaft Oederlin & Cie. Armaturenwerk Wettingen, Wettingen, Switzerland
Filed Mar. 9, 1973, Ser. No. 339,807
Claims priority, application Switzerland, Mar. 13, 1972, 3667/72
Int. Cl. F16k *1/00*
U.S. Cl. 137—119 **6 Claims**



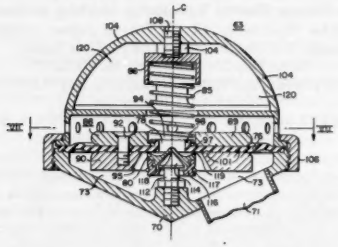
1. A plumbing fitting for use in tub and shower, or the like use, comprising:
a body; an inlet to said body; a valve chamber in said body to which said inlet is connected;
said body having a first outlet communicating with and connected to said valve chamber; said body having a separate second outlet communicating with and connected to said valve chamber;
valve means in said valve chamber, including a valve element for selectively blocking one of said first and said second outlets; means for shifting said valve element for said selective blocking;
said first outlet terminating in an outflow sleeve, which said sleeve is supported on said fitting body and through which said sleeve the liquid from said first outlet exits; said sleeve having an exit outlet opening; said sleeve being pivotally supported on said body to be pivotable with respect to said body about a first axis; said sleeve outlet opening being directed transversely to said first axis, whereby pivoting of said sleeve redirects exit flow through said opening;
said sleeve being connected with and comprising part of said means for shifting said valve element; said sleeve being shiftable with respect to said body, thereby to shift said valve element;
whereby movements of said sleeve can control direction of flow through said first outlet opening and can determine through which of said first and said second outlets the exit flow passes.

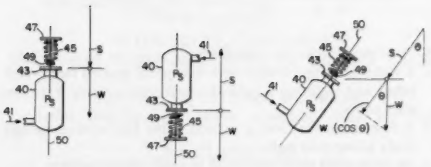
3,841,347
ROTARY VALVE
Kazuhiko Kushida, 2454, Tazima, Urawa, Japan
Filed Dec. 11, 1972, Ser. No. 314,007
Int. Cl. F16k *5/08*
U.S. Cl. 137—242 **2 Claims**



1. In a rotary valve, a sealing plate provided at the boundary between a valve chamber containing a rotatable valve element therein and a fluid inlet, said sealing plate comprising a relatively thin elastic disc member welded to a relatively thick, rigid disc member, both of said disc members having openings therein, the inner peripheral edge of said elastic disc member defining a circular opening having a cutting edge, said cutting edge engaging the outer surface of said valve element when said valve is closed, said elastic disc member being of a material having sufficient hardness to effect a cutting of fibers or the like between said cutting edge and said valve element.

3,841,348
FLUID PRESSURE CONTROL APPARATUS
Wilbur J. O'Neill, Severna Park, Md., assignor to Westinghouse Electric Company, Pittsburgh, Pa.
Filed June 12, 1969, Ser. No. 832,671
Int. Cl. F16k *17/00, 21/04*
U.S. Cl. 137—494 **7 Claims**





1. An exhaust valve for a diver's underwater breathing system wherein the diver breathes a pressurized gas comprising:

A. a valve housing for connection to a pressurized portion of said system;

B. a movable flexible diaphragm means forming a chamber with said valve housing;

C. exit means responsive to a predetermined movement of said flexible diaphragm means for allowing escape of gas from said chamber;

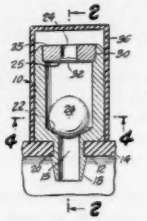
D. spring means positioned for opposing movement of said flexible diaphragm means;

E. weighting means attached to said flexible diaphragm means for aiding or opposing said spring means in accordance with the positional orientation of said valve;

F. said weighting means including two sections, a first of said sections being on one side of said flexible diaphragm means, the second of said sections being on the other side of said flexible diaphragm means;

G. said second section including projections which dig into the flexible diaphragm means.

3,841,349
TRICKLE RATE FLUID OUTLET
Theodore J. Todd, 1039 East Grand Blvd., Corona, Calif. 91720
Continuation of Ser. No. 60,523, Aug. 13, 1970, abandoned.
This application Mar. 17, 1972, Ser. No. 235,539
Int. Cl. F16k *15/04*
U.S. Cl. 137—513.5 **5 Claims**



1. In a device of the character described for releasing a fluid from a pressurized source at a low rate, the combination of:

an upright valve cage having an inner wall forming an upright passage for fluid flow therethrough with an inlet port at the bottom end of the passage to receive fluid from the source and an outlet port at the upper end of the passage,

each of said ports being formed with an inner valve seat; and

a valve member in said passage to seat in the two valve seats alternately,

said valve member being biased gravitationally towards said inlet seat,

said valve member being smaller in cross section than the cross section of the passage to permit initial fluid flow through the passage to sweep past the valve member,

said valve member being of a cross section to respond to the dynamic pressure of the fluid flowing through the passage to move to the valve seat of the outlet port in response to rise in the rate of the fluid flow,

whereby placing the inlet port in communication with the pressurized source results, first, in unseating of the valve member to open the inlet port, second, initial fluid flow past the valve member to flush out the valve cage, third, movement of the valve member into the valve seat of the outlet port and, fourth, retention of the valve member in the seat of the outlet port by the

pressure differential across the outlet port as long as the cage remains in communication with the pressurized source,

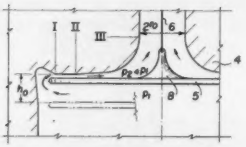
said valve cage having a minute passage by-passing the seat in the outlet port for discharge flow from the cage when the valve member is seated in the valve seat of the outlet port; and

means defining at least one discharge passage having a portion spaced radially outward from the inner circumferential surface of the valve cage, said discharge passage leading downwardly from the outlet port and the by-pass passage.

3,841,350
RAPID SHUTOFF SAFETY VALVE

Gerhard Griensteidl, Bluetenstrasse 10, 8000 Muenchen-Karlsfeld, and Helmut Michel, Hauptstrasse 22, 73 Esslingen-Sulzgries, both of Germany

Filed Aug. 14, 1972, Ser. No. 280,584
Claims priority, application Germany, Aug. 13, 1971, 2140629
Int. Cl. F16k *15/00*
U.S. Cl. 137—516.27 **23 Claims**

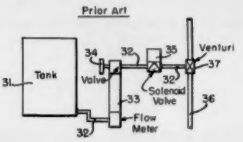


1. An automatic rapid shutoff safety valve, especially for gaseous media, comprising a valve housing having a central axis, a first port in said housing, a second port in said housing, said ports defining a first flow direction from said first port to said second port for a first flow to be interrupted in response to a given speed of said first flow, said ports defining a second flow direction opposite to said first flow direction for a second, normal flow, orifice means supported in said housing for defining an aperture of given diameter through which said first and second flow normally pass, a closure disk having a first surface facing said first flow and a second surface facing said second flow, means for movably supporting said closure disk in said housing upstream of said aperture as viewed in said first flow direction whereby the first flow impinges substantially at right angles on at least a portion of said first flow facing surface of the closure disk which is axially movable relative to said aperture, said orifice means including an outer ring portion, said closure disk also including an outer ring portion, said outer ring portions having a diameter substantially larger than said given diameter of said aperture, said outer ring portions forming a ring gap which is sealed when said outer ring portions contact each other, said gap providing a sufficient spacing between said orifice means and said closure disk to keep the valve open under normal flow conditions and to close the valve rapidly by the first flow exceeding said given speed, said orifice means further including an inner ring portion located between said outer ring portion and said aperture of said orifice means, said inner ring portion facing said closure disk and having such a shape as to form an orifice gap with the closure disk, said orifice gap representing a Laval nozzle in response to the speed of said first flow impinging upon said closure disk.

3,841,351
VERSATILE REPLENISHMENT SYSTEM FOR AUTOMATIC FILM PROCESSORS

Junji Shida, Kyoto, Japan, assignor to Log Electronics Inc., Springfield, Va.

Filed Apr. 9, 1973, Ser. No. 349,361
Int. Cl. G03d *3/02*
U.S. Cl. 137—572 **10 Claims**

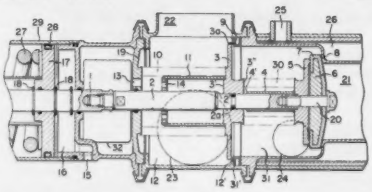


1. A replenishment system for a film processor of the type comprising a treatment tank containing a processing chemical for treating an exposed photographic film, said replenishment system being operative to supply additional processing chemical to said treatment tank to maintain the chemical activity in said tank at a desired level, said replenishment system including a supply tank containing a quantity of said processing chemical, fluid distribution means between an outlet from said supply tank and an inlet to said treatment tank, said fluid distribution means comprising a plurality of parallel flow lines, flow control means coupled to said lines for causing said lines to exhibit different flow rates respectively, electrically operable solenoid valve means in each of said lines for normally preventing the flow of fluid therethrough, an energization source, and switch means for selectively coupling said energization source to at least one of said solenoid valves for causing processing chemical to flow from said supply tank to said treatment tank at a selected one of plural possible flow rates.

3,841,352
COMPOUND ASEPTIC VALVE

Katsuto Okada; Shoichi Yamanami; Akichika Ishibashi, and Hirotaka Watanabe, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed July 23, 1973, Ser. No. 381,777
Claims priority, application Japan, Aug. 3, 1972, 47-91544
Int. Cl. F16k *11/00*
U.S. Cl. 137—614.19 **5 Claims**



1. A compound valve comprising:

a. a valve housing formed with two ports spaced from each other and defining a path through said housing between said ports;

b. a first valve seat and a second valve seat spaced in said body along said path;

c. an elongated shaft mounted in said valve housing;

d. first actuating means for longitudinally moving said shaft;

e. first and second valve members mounted on said shaft,

1. said first valve member sealingly engaging said first valve seat in response to movement of said shaft in one direction by said actuating means, and thereby blocking said path between said ports,

2. said first valve member being released from said first valve seat in response to subsequent movement of said shaft in a direction opposite to said one direction by said actuating means; and

f. second actuating means for moving said second valve member relative to said shaft in the direction of elongation of said shaft toward and away from a position of sealing engagement of said second valve member with said second valve seat,

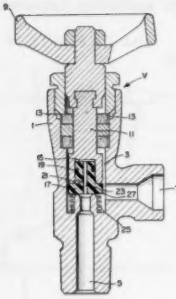
1. said valve member is said position thereof blocking said path,
2. said second actuating means including bellows interposed between said housing and said second valve member in the direction of elongation of said shaft,
3. said bellows enclosing a longitudinal portion of said shaft.

3,841,353

ANTI-SURGE OXYGEN CYLINDER VALVE

Byron Hillen Acomb, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 19, 1973, Ser. No. 371,518
Int. Cl. F16k *1/30*
U.S. Cl. 137—630 **3 Claims**



1. An anti-surge oxygen cylinder valve comprising a housing having a chamber with an inlet passage and an outlet passage; a valve stem extending through a bore in said housing and into said chamber, and having a bore in the end thereof; a plunger member in sliding engagement with said bore in the end of said valve stem, said plunger having a center passage through the length thereof, said valve stem and plunger arrangement adapted to seal off said inlet passage when the valve is in the closed position; resilient means mounted in said chamber between said housing and said plunger and urging said plunger away from said inlet; and means for bleeding gas pressure from said inlet passage through said valve stem and plunger arrangement for slowly building the pressure in said chamber.

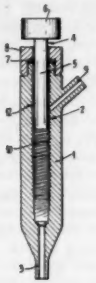
3,841,354

FLOW REGULATING DEVICE

Roy Edward McDonnell, 15 Miller St., Canberra, Australia (2601)

Filed May 31, 1973, Ser. No. 365,454
Claims priority, application Australia, May 22, 1973, 9074/73
Int. Cl. F16d *1/00*
U.S. Cl. 138—43 **9 Claims**

1. A device for regulating the flow of a liquid which comprises a tubular body portion provided with an internal helical thread, said liquid being supplied at or towards one end of said body portion and being withdrawn at or towards the other end of said body portion; and a pin fitting within the tubular body portion and inserted in one end thereof, and being provided with an external helical thread cooperating with the said internal helical thread of the body portion such that rotation of the pin with respect to said body portion causes axial displacement of the pin within the body portion; said external helical thread on said pin having a first and a second end, the ridge of the external helical thread being removed to an increasing extent over at least part of the length thereof from said first to said second end such that said ridge is completely removed at said second end thereof, and said internal helical thread in said body portion having a first and a second end corresponding to said first and second ends of said external helical thread, the trough of the internal helical thread being filled to an increasing extent over at least part of the length thereof from



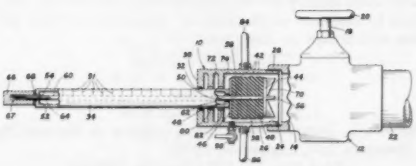
said first to said second end such that said trough is completely filled at said second end thereof, the length of said internal helical thread over which the trough of the thread is filled to an increasing extent corresponding to the said length of said external helical thread over which the ridge of the thread is removed to an increasing extent such that the extent to which the trough of the internal helical thread is filled at any point on the length thereof corresponds with the extent to which the ridge of the external helical thread is removed at a corresponding point on the length thereof.

3,841,355

PIPE PLUGGING TOOL

Gary J. Laner, Rt. 1, Box 250, Wagoner, Okla. 74467

Filed June 16, 1972, Ser. No. 263,591
Int. Cl. F16l *55/12*
U.S. Cl. 138—89 **6 Claims**



1. An expandable pipe plugging tool for plugging off fluid flow through a pipe upstream of a valve, the pipe plugging tool comprising a pipe section having one open end, the opposite end thereof being closed, a drain valve providing communication between the inside of the pipe section and the outside of the pipe section, a coupling attached to the open end of the pipe section providing for attachment of the pipe section to the valve, said pipe section having a centrally disposed aperture in the closed end thereof, an elongated hollow tool rod slidably disposed within the aperture, sealing means interposed between the aperture and the tool rod, at least one alignment bushing secured within the pipe section adjacent to the closed end thereof, said tool rod being in sliding engagement with the bushing for alignment of said tool rod with

respect to the pipe section and for the prevention of angular pressure being applied to said sealing means, an expandable cylindrical plug of resilient material secured to one end of the tool rod and slidably disposed within the pipe section, said plug having a plurality of spaced annular grooves around the outer periphery thereof and a longitudinal centrally disposed bore therethrough, and an operator means operably connected between the expandable plug and the opposite end of the tool for selective radial expansion and contraction of the plug, said operator means including an elongated operator rod slidably disposed within the tool rod and the expandable plug bore, a first disc-shaped retainer plate rigidly secured to one end of the operator rod for retaining the plug thereon, a second disc-shaped retainer plate having a centrally disposed aperture therein, said second retainer plate being slidably disposed on the operator rod between the opposite end of the plug and one end of the tool rod, a seal interposed between the tool rod and the operator rod to prevent passage of fluid therebetween, and a take-up operably connected to the operator rod on the end opposite the expandable plug which provides for reciprocal motion of the operator rod within the tool rod and within the takeup, said take-up comprising an elongated cylindrically shaped take-up nut having a centrally disposed threaded bore therethrough, a thrust washer, and a plurality of corresponding threads on the end portion of the operator rod on the end opposite the expandable plug, said end portion of the operator rod being threadedly journalled within the take-up nut with the thrust washer being disposed about the operator rod and interposed between the take-up nut and the end of the tool rod; whereby, upon rotation of the take-up nut in one direction relative to the operator rod, the end of the operator rod opposite the take-up nut will be moved in a longitudinal direction away from the thrust washer, and upon rotation of the take-up nut in the opposite direction relative to the operator rod, the end of the operator rod opposite the take-up nut will be moved in a longitudinal direction toward the thrust washer; and whereby the coupling may be attached to the valve, the expandable plug passed through the valve into the pipe upstream of the valve, the operator rod retracted within the take-up to move the first disc-shaped retainer plate closer to the second disc-shaped retainer plate and thereby longitudinally compress the expandable plug to effectuate an expansion in the diameter of the outer periphery of the expandable plug to close off the pipe upstream of the valve, and the drain valve opened to bleed pressure from the valve and to determine the completeness of the seal of the expandable plug in the upstream pipe, thereby permitting the removal of the pipe section and the valve while leaving the expandable plug and the tool rod in place to facilitate maintenance or replacement of the valve with substantially no fluid loss.

3,841,356

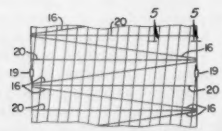
REINFORCING CAGE

Kenneth E. James, Denver, Colo., assignor to Stressed Pipe Research, Inc., Englewood, Calif.

Filed Mar. 12, 1973, Ser. No. 340,019

Int. Cl. F16l *9/08*

U.S. Cl. 138—175 **11 Claims**



1. A reinforcing cage for use within the wall of concrete pipe, comprising:

a. a first strand of reinforcing material, such as steel wire or rod, forming a first coil with axially spaced convolutions,

b. a longitudinally extending pair of strands disposed on the top of the first coil at angular positions therearound and in a configuration such that said pair forms right and left hand helices,

c. a second like strand forming a second coil, the convolutions of which are disposed between the convolutions of the first coil, the tension therein being sufficient to distort the longitudinally extending strands at the points of crossing with both coils into generally sinusoidal form having valleys therealong, the valleys forming locks to maintain the two coils in axially spaced relationship, and

d. means securing the ends of the two coils together, forming an end ring at each end of the cage.

3,841,357

PIPING BETWEEN A BUOY AND A STATIONARY CONDUIT

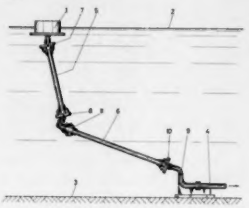
Willem Jan Van Heijst, St. Leon, Monaco, assignor to N.V. Industrieele, Handelscombinatie, Netherlands

Filed Feb. 21, 1973, Ser. No. 334,214

Claims priority, application Netherlands, Mar. 10, 1972, 7203231

Int. Cl. F16l *11/00*

U.S. Cl. 138—120 **3 Claims**



1. Piping between a buoy and a conduit anchored on the ocean bottom or the like, comprising two rigid tubes the upper of which is more nearly vertical than the lower, a cardan joint between the buoy and the upper tube, a cardan joint between the two tubes, a cardan joint between the lower tube and the conduit, a joint flexible about a single axis at one end of the lower tube, and flexible hoses connecting said tubes in the region of said joints.

3,841,358

APPARATUS FOR FORMING LENO SELVEDGE

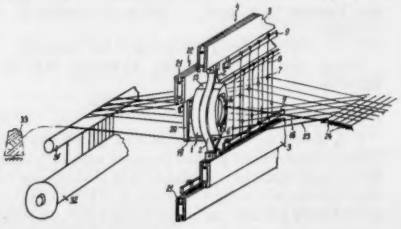
Vladimir Svaty, and Lubomir Taticek, both of Liberec, Czechoslovakia, assignors to Elitex, Zavody testilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed Sept. 7, 1972, Ser. No. 286,860

Claims priority, application Czechoslovakia, Sept. 10, 1971, 6472-71

Int. Cl. D03c *11/00*

U.S. Cl. 139—54 **9 Claims**



1. Loom apparatus for forming selvedges with leno weaves from warp threads and added threads, said loom having a

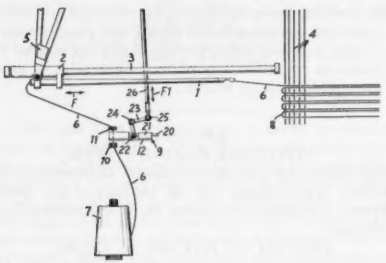
plurality of heald shafts, said heald shafts being capable of movement in opposite reverse directions to form a shed, at least one pair of heald shafts in which one shaft is located behind the other, a plurality of heddles located on each of said heald shafts, each of said heddles having an eyelet through which a warp thread is fed, a carrier located on one of said heald shafts in position corresponding to an eyelet of a certain of said heddles of the other shaft, supply means located on said carrier for supplying added thread and means for circularly moving the carrier and the heddle through which said warp thread is fed relative to each other to entwine said warp and said added thread about each other.

3,841,359

WEFT STOP MOTION FOR SHUTTLELESS LOOMS

Adriano Gardella, 24 B, Via Al Capo di Santa Chiara, Genoa, Italy

Filed June 12, 1972, Ser. No. 261,961
Claims priority, application Italy, June 18, 1971, 12757/71
Int. Cl. D03d *51/34*
U.S. Cl. 139—370 **12 Claims**



1. A weft stop motion for shuttleless weaving looms operatively arranged between the weft thread supply means and the weft thread inserter, comprising:

a weft senser means,

a control means,

means for mounting said weft senser means for movement relative to the control means between an inactive position and an active position, the active position including an actuating position in which the weft senser means actuates the control means and a non-actuating position in which actuation of the control means is excluded,

said seft senser means being movable into the path of the weft as the weft senser means moves from the inactive position to the active position, said weft senser means being positioned such that as it moves from said inactive position to said active position, (a) a moving thread entrains the weft senser means and moves it into said non-actuating position and (b) if the thread is not running, the weft senser means moves into said actuating position to actuate the control means.

3,841,360

WIRE CAGE CUTTER

C. Warren Turner, Redmond, Wash., assignor to The Black Clawson Company, Middletown, Ohio

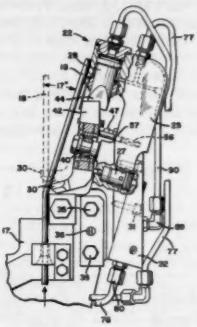
Filed Sept. 4, 1973, Ser. No. 394,165
Int. Cl. B21f *27/10*
U.S. Cl. 140—1 **10 Claims**

1. Wire cutting apparatus for use on a machine for making wire cages for reinforcement of concrete structures, comprising:

a. a support frame,

b. opposed wire cutter jaws,

c. means on said frame mounting said jaws for movement into and out of a cutting position adjacent said frame,



d. means connected to said frame for moving said jaws into and out of said cutting position, and

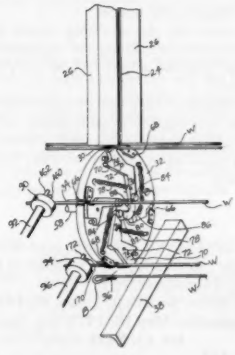
e. means connected to said frame for operating said jaws to cut a wire therebetween when said jaws are in said cutting position.

3,841,361

MACHINE FOR BENDING THE END PORTIONS OF WIRES

John P. Kieronski, Charlotte, N.C., assignor to William F. Leiendecker, Sr., Charlotte, N.C.

Filed Feb. 28, 1973, Ser. No. 336,728
Int. Cl. B21f *1/06*
U.S. Cl. 140—73 **26 Claims**



1. A machine for bending the ends of wires to form articles such as bale ties or the like comprising means for mounting a plurality of elongate wires with the longitudinal axes thereof parallel and spaced apart and for rotating the wires about an axis parallel to and spaced from the wire axes thereby indexing said wires sequentially through a plurality of spaced apart stations with the end portions of said wires projecting freely from said mounting and rotating means, loop forming means operable at one of said stations to engage a projecting wire end portion and bend said end portion reversely into the general configuration of a loop, and loop bending means operable at a station subsequent to said one station to engage the loop configuration of a wire end portion and bend said loop configuration along an axis extending generally across said loop configuration.

3,841,362

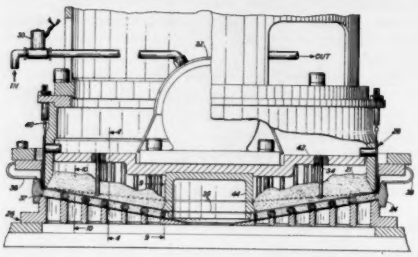
DISPENSING OF VISCOUS MATERIAL

Albert H. Haller, Clark; John J. Larkin, Littleneck, and Richard P. Walters, Watchung, all of N.J., assignors to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 178,133, Sept. 7, 1971, Pat. No. 3,782,595. This application Oct. 23, 1973, Ser. No. 408,706

Int. Cl. H01m *7/00*

U.S. Cl. 141—32 **6 Claims**



1. Apparatus for dispensing a controlled quantity of viscous material into an article, which comprises:

a hopper for the viscous material, said hopper having a grid bottom with openings therein small enough to preclude free flow of the material therethrough when the material is statically held in the hopper, but with said openings large enough to permit flow of said material when the material is subjected to vibration;

means for engaging the bottom of the hopper with the article which is to receive the controlled quantity of the material;

means for vibrating the hopper;

means for operating the vibrating means for a predetermined period of time during the engagement of the hopper bottom with the article to flow the material into the article; and

means, operable after cessation of operation of the vibrating means, for rotating the hopper about an axis extending perpendicularly through the grid bottom to shear the material remaining in the hopper away from the material in the article.

3,841,363

CONTAINER FILLING MACHINE

Joseph T. Stigler, Rochester, N.Y., assignor to Rostgo International Corp., Tonawanda, N.Y.

Continuation of Ser. No. 214,073, Dec. 30, 1971, abandoned. This application May 10, 1973, Ser. No. 358,851

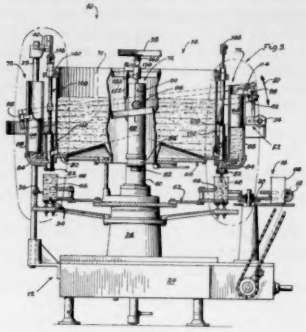
Int. Cl. B65b *57/02*

U.S. Cl. 141—142 **15 Claims**

1. In a rotary type container filling machine having a source of flowable product to be dispensed, pump means, valve means having a first condition for placing said pump means in flow communication with said source during a pump means charging portion of the operational cycle of the machine and having a second condition for placing said pump means in flow communication with a product discharge means during a pump means discharge-container filling portion of said operational cycle, and means for disabling said valve means whereby to prevent said valve means from placing said pump means in flow communication with said product discharge means when no container is positioned for receipt of said product from said discharge means during said pump means discharge-container filling portion of said operational cycle, the improvement comprising in combination:

means for continuously biasing said valve means from said first condition into said second condition;

means operable during said pump means charging portion of said operational cycle for maintaining said valve means in said first condition against said bias; and



said disabling means constrains said valve means in said first condition against said bias during said pump means discharge-container filling portion of said operational cycle when no container is positioned for receipt of product from said discharge means.

3,841,364

CONTAINER FILLING SYSTEM

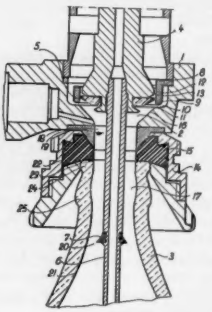
Werner Heckmann, Gutenbergstrasse 59, 46 Dortmund; Heinz Jordan, Wormsstrasse 13, 46 Do-Korne, and Heinrich Wenker, Lothringhauser Strasse 86, 46 Do-Hombruch, all of Germany

Filed Sept. 13, 1971, Ser. No. 176,402

Claims priority, application Germany, Sept. 12, 1970, 2045159

Int. Cl. B65b *3/04*

U.S. Cl. 141—286 **7 Claims**



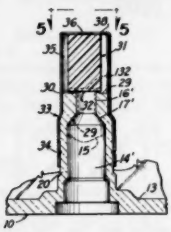
1. A filling system for filling liquid under pressure into a container comprising a container having a neck portion provided with a cylindrical inlet opening of a predetermined cross-sectional area and having an end face surrounding said inlet opening and having a predetermined surface area; a filling head having a cylindrical outlet opening of said predetermined cross-sectional area and adapted to be placed in registry with said inlet opening; an annular sealing element having a cylindrical central passage of said predetermined cross-sectional area and an annular surface portion of said predetermined surface area and sealingly interposed between

said inlet opening and said outlet opening; and a centering member on said filling head engaging said neck portion and said sealing element for centering said outlet opening and said passage with reference to said inlet opening and for centering said annular surface portion with reference to said end face, to thereby obtain a cylindrical transition-less liquid-flow path of constant cross-sectional area.

3,841,365
UNITARY RESILIENT SEALING VALVE

Harry L. Vaughan, Lawrenceville, Ga., assignor to Scripto, Inc., Atlanta, Ga.

Division of Ser. No. 89,257, Nov. 13, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,395
Int. Cl. B65b *3/04*; B67c *3/02*
U.S. Cl. 141—291 **8 Claims**

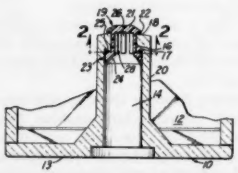


1. A fill valve for a lighter having a reservoir for containing a supply of fuel therein, a fill port communicating with said reservoir and adapted to receive a charging apparatus therein for introducing fuel into said reservoir, a valve means associated with said fill port, said valve means including a sleeve fixedly disposed about the inner end of said fill port and having an opening therein, and a flexible and resilient plug member disposed within said sleeve in spaced relationship and normally in sealing contact with the inner end of said fill port said resilient plug being flexed out of sealing contact with the inner end of the fill port upon inserting of the charging apparatus so as to allow introduction of fuel into the reservoir along the path connecting the inner end of said fill port and the spacing between the plug and the sleeve and the sleeve opening.

3,841,366
UNITARY RESILIENT SEALING VALVE

Harry L. Vaughan, Lawrenceville, Ga., assignor to Scripto, Inc., Atlanta, Ga.

Continuation of Ser. No. 89,257, Nov. 13, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,396
Int. Cl. B65b *3/04*; B67c *3/02*
U.S. Cl. 141—291 **6 Claims**

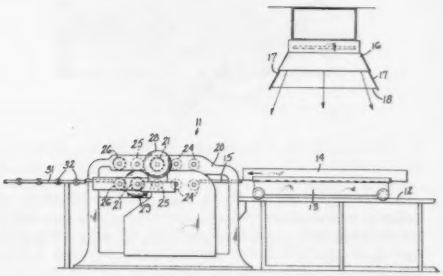


1. A fill valve for a lighter having a reservoir for containing a supply of fuel therein, a fill port communicating with said reservoir and adapted to receive a charging apparatus therein for introducing fuel into said reservoir, said fill port having an inwardly facing valve seat surface adjacent its inner end, a resilient and flexible valve means associated with said fill port, said valve means including a poppet head positioned adjacent said valve seat surface of said fill port and normally in sealing engagement therewith, a base ring spaced from said poppet head and connected to said fill port, and a plurality of longitudinally projecting flexible posts connecting said base ring with said poppet head and forming apertures between said posts whereby introduction of a charging apparatus flexes said posts and displaces said poppet head away from engagement with said valve seat and allows the introduction of fuel into said reservoir through said fill port and said apertures formed between said flexible posts.

3,841,367
PLANING AND GROOVING MACHINE

Vito M. Vizziello, Hamden, Conn., and Charles A. Bouteiller, Barrington, Mass., assignors to New England Log Homes, Inc., New Haven, Conn.

Filed May 9, 1973, Ser. No. 358,690
Int. Cl. B27c *9/04*
U.S. Cl. 144—3 R **10 Claims**

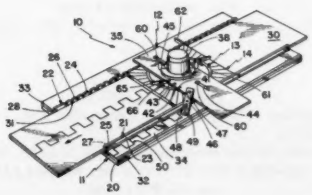


1. In a machine for planing a workpiece, said machine including a frame, at least one driven roll having at least one planing blade thereon, and a plurality of feed rolls, the improvement which comprises a grooving blade positioned on said driven roll coincident with said planing blade to cut a groove in said workpiece to a depth greater than the depth of the planing cut, whereby said machine is adapted for simultaneous planing and grooving of said workpiece.

3,841,368
ROUTING DEVICE

Nicholas H. Ritter, 11318 Nashville Ave., Worth, Ill. 60635

Filed Aug. 20, 1973, Ser. No. 389,965
Int. Cl. B27c *5/10*
U.S. Cl. 144—134 R **8 Claims**



1. A device for guiding the cutting tool of a routing tool with respect to a work piece surface comprising a guide base hav-

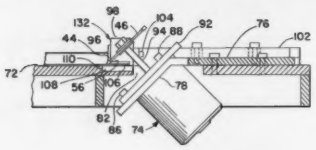
ing parallel longitudinal indexing and support means thereon adapted to position a work piece and provide a primary guide for the tool to be used thereon, a tool platform adapted to position and support the routing tool on said parallel means in working contact with the work piece, a plate slidably connected with said tool platform for relative movement therewith, and a frame guided longitudinally by said parallel means and adapted to retain said plate rotatable therewith whereby the selective movement of said plate in said frame and said platform with respect to said plate will cause the tool cutter to operate in a given path with respect to the work piece surface.

3,841,369

SEAMLESS EDGE LAMINATION APPARATUS

Edward Noland Roche, 5 Hickory Hill Rd., Cockeysville, Md. 21030

Filed Feb. 16, 1973, Ser. No. 333,122
Int. Cl. B27d *1/00;* **B27f** *1/00*
U.S. Cl. 144—136 R **2 Claims**



1. A tool for use in fitting high pressure laminate sheet material to base sheet material, comprising structure defining a supporting surface for sheet material, the supporting surface having an aperture therein, drive means including a spindle extending upwardly from the supporting surface aperture at substantially a 45° angle to the supporting surface, a rotary cutter having opposed axial faces with a cutting surface on each and a peripheral-cutting surface forming therewith, in section, respectively substantially right-angle corners; the drive means spindle mounting the rotary cutter with the right angle corner nearer to the drive means positioned for cutting proximate the supporting surface, guide structure positioned in a plane passing diagonally through the peripheral-cutting surface on a line substantially tangent thereto, the guide structure including an aperture intermediate the length thereof, a portion of the rotary cutter positioned in the aperture beneath a portion of the guide structure, and means for adjustably pivoting the drive means relative to the supporting surface about an axis in parallel spaced relation with the axis of said spindle, whereby the portion of the rotary cutter in the aperture passes by said portion of the guide structure at a substantially constant distance therefrom during said adjustable pivoting.

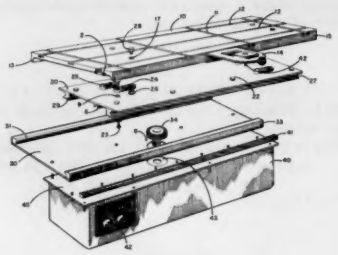
3,841,370

FEED ASSEMBLY

Friedrich Peter Schell, 4313 San Bernardino Ave., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 198,727, Nov. 15, 1971. This application Dec. 11, 1972, Ser. No. 314,131
Int. Cl. B27c *5/06*
U.S. Cl. 144—144.5 **38 Claims**

1. A material feeding and shaping assembly comprising:
a. a support carriage,
b. an upper platform mounted on said support carriage,
c. means secured between said upper platform and support carriage for directing eccentric lateral and parallel displacement of said upper platform relative to said support carriage,



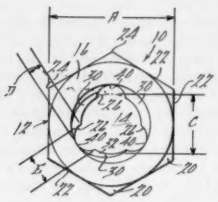
d. drive means for driving said support carriage reciprocally along a substantially linear guide member, and
e. biasing means for urging said upper platform laterally.

3,841,371

LOCK NUT

Raymond L. Thurston, Flossmoor, Ill., assignor to Microdot Inc., New York, N.Y.

Continuation-in-part of Ser. No. 748,859, July 30, 1968, abandoned. This application May 8, 1970, Ser. No. 35,735
Int. Cl. F16b *29/00, 39/284*
U.S. Cl. 151—21 R **1 Claim**



1. In a lock nut in combination with an externally threaded element of predetermined thread profile, pitch, pitch diameter and hardness, the improvement comprising
a body portion of a material relatively softer than the material of said threaded element so as to preclude cutting of said threaded element by said lock nut,
said body portion having a central axis and a circular cylindrical opening extending therethrough coaxially with said central axis,
the opening in said body portion having three equally circumferentially spaced, radially outwardly extending relief grooves on the periphery thereof,
the relief grooves in said body portion extending axially the entire length of said opening and being of like arcuate configuration and radial spacing from the central axis of said body portion,
said relief grooves defining three equally circumferentially spaced axially extending land sections therebetween respectively,
said relief grooves and said land sections being of substantially equal circumferential dimension, said land sections being provided with a thread form having a pitch, sense and profile similar to said threaded element,
the relief grooves in said body portion extending radially outwardly to at least the root depth of the thread profile on said land sections,

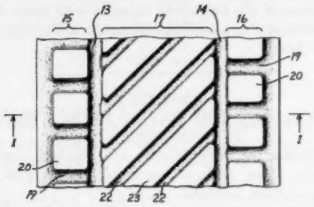
the thread form on the lands of said nut, respectively, having a pitch diameter relatively less than the pitch diameter of the threads on said threaded element,

whereby the lands on the body portion of said nut are elastically deflected radially outwardly upon engagement with said element to provide substantial surface-to-surface contact between the threads of said nut and the threads of said element as well as balanced pressure on each of said lands.

3,841,372
PNEUMATIC TIRES

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Establissements Michelin, raison sociale Michelin & Cie, Clermonet-Ferrand, France

Filed May 25, 1972, Ser. No. 256,947
Claims priority, application France, May 27, 1971, 71.19407
Int. Cl. B60c *11/08*
U.S. Cl. 152—209 R **10 Claims**

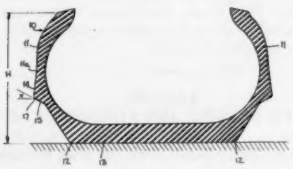


1. A tire comprising a radial carcass and a crown reinforcement formed of a plurality of stacked plies belonging alternately to two groups, the plies of one and the same group having their ends tiered, characterized by the fact that the tread is cut into three zones composed of a central zone and two side zones by means of two circumferential grooves located in such a manner that their center line is between the ends, located on one and the same side of the central plane of the tire, of the two crown plies whose edges are nearest to said central plane.

3,841,373
PNEUMATIC TIRE

Arnold A. Gilreath, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,481
Int. Cl. B60c *13/00*
U.S. Cl. 152—209 B **8 Claims**

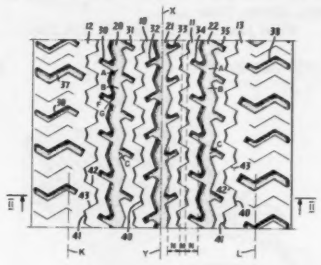


1. A pneumatic tire comprising sidewalls, shoulders and a tread, at least one sidewall having an annular rib integral therewith projecting laterally from the sidewall and having its radially outer surface displaced radially inwardly from the shoulder of the tire under load and having its region of maximum lateral projection displaced radially outwardly from the region of maximum width, exclusive of said rib, of the tire under load, said region of maximum lateral projection of said rib extending outwardly of the tire at least as far as the region of maximum width, exclusive of said rib, of the tire under load, and said radially outer surface of said annular rib being inclined with respect to the axis of the tire at an angle in the range of ten to fifty degrees when the tire is under load.

3,841,374
TIRES

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Establissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Mar. 23, 1973, Ser. No. 344,423
Claims priority, application France, Apr. 4, 1972, 72.11838
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **10 Claims**

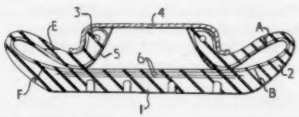


1. In a tire for delivery trucks whose tread is composed of a plurality of continuous circumferential ribs separated from each other by relatively wide zigzag circumferential grooves, said ribs being cut transversely by relatively narrow blind grooves debouching into the zigzag circumferential grooves and being cut by thin, deep lamellae, the improvement which comprises the transverse grooves and the lamellae being located on the borders of the circumferential ribs so as to define in each circumferential rib a central zone of a transverse width of between one-quarter and one-half of the transverse width of the rib and which central zone is not cut in depth and accordingly is rigid, and the transverse grooves which debouch into the zigzag circumferential grooves having a flared shape and their edges form angles with the circumferential direction which are definitely greater than the angles of the edges of the zigzag circumferential grooves and accordingly favoring the mobility of the borders of the ribs and the drainage of their entire surface.

3,841,375
PNEUMATIC TIRES

Reginald H. Edwards, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Aug. 9, 1972, Ser. No. 279,239
Claims priority, application Great Britain, Aug. 21, 1971, 39343/71
Int. Cl. B60c *9/04, 5/00*
U.S. Cl. 152—355 **15 Claims**



1. A radial ply pneumatic tire comprising a tread, a pair of sidewalls each terminating in a tire bead and a carcass of substantially radial cords extending from one tire bead to the

other, each sidewall having a highly resilent region disposed axially inwardly and axially outwardly of the carcass and extending radially outwardly from a point radially inward of the maximum width of the tire to the radially outer extremity of the sidewall, the highly resilient region being formed of a high resilient rubber compound having a rebound resilience of at least 87 percent measured by the Lupke pendulum method according to British Standard 903/1950 and a hardness in the range of 45 – 65 Shore A.

3,841,376

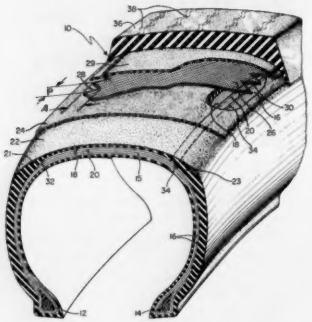
PNEUMATIC TIRE AND METHOD OF RETREADING

Kenneth H. Paulin, Tallmadge, and Merritt W. Wolfe, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 2, 1973, Ser. No. 320,218

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 R **9 Claims**



1. A method of providing a new tread on a pneumatic tire of the type having a carcass and a reinforcing structure extending circumferentially about the carcass and terminating in axial directions in the shoulder areas of the tire said method comprising preparing the tread area of the tire to receive a new tread, preparing a layer of square woven cord reinforced fabric having a length greater than its width and coated with a vulcanizable elastomeric material, providing a dentate configuration along at least one of the long edges of said fabric, and wrapping said fabric circumferentially about said tire such that the dentate configuration, on at least one side thereof, extends from a point axially inwardly of to a point axially outwardly of axially outer edge of said reinforcing structure.

3,841,377

RADIAL TIRE HAVING BEAD STIFFENER OF CROSSED STEEL CORDS

Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Mar. 8, 1973, Ser. No. 339,361

Claims priority, application France, Mar. 9, 1972, 72.8332

Int. Cl. B60c *15/06*

U.S. Cl. 152—362 CS **7 Claims**

1. A tire comprising a carcass and a pair of beads each formed with a heel and a toe edge and, in each bead, a single bead ring, said carcass being formed of at least one ply comprising cords arranged in radial planes of the tire and folded outwardly around the bead ring in each bead, further comprising a stiffener of steel cords in each bead arranged on the outside of the carcass, each stiffener comprising at least two layers of crossed cords, extending between a point located

radially beyond the end of the carcass and a point located along the base of the bead, and being spaced apart from the carcass and bead ring a minimum distance in the region of the heel of the bead.

3,841,378

PNEUMATIC TIRE HAVING FLEECE BEAD REINFORCEMENTS

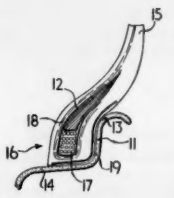
Wilhelm Hamacher, Bruchkobel, and Hubert Leinweber, Hanau am Main, both of Germany, assignors to Dunlop Limited, London, England

Division of Ser. No. 104,207, Jan. 6, 1971, Pat. No. 3,752,720. This application May 17, 1973, Ser. No. 361,065

Claims priority, application Germany, Jan. 15, 1970, 2001706

Int. Cl. B60c *15/00*

U.S. Cl. 152—362 R **6 Claims**



1. A pneumatic tire having at least one reinforcement separate from the carcass plies in a bead region of the tire comprising a rubberized fiber fleece, the fibers of which have a direction of preferential orientation which is substantially perpendicular to the tire circumference.

3,841,379

DEVICE FOR SPOKING AND ALIGNMENT OF WIRE WHEELS

Gary W. Kinney, 2615 Scenic View Dr. NW, Huntsville, Ala. 35810

Filed Aug. 7, 1972, Ser. No. 278,629

Int. Cl. B21k *1/34*

U.S. Cl. 157—1.5 **2 Claims**

1. A device for spoking and alignment of wire wheels comprising:

a supporting frame;

rim supporting means mounted on said frame;

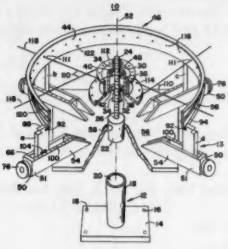
hub mounting means for gripping and providing an axial reference for the center of a hub of a wheel and comprising:

a threaded shaft shaft mounted on and extending from said frame, and

means for axially adjusting the position of a said hub mounted on said shaft with respect to said rim supporting means and including two rim engaging members threadedly mounted on said shaft for engaging opposite sides of a said hub;

said rim supporting means comprising:

at least three rim engaging members, said rim engaging members each having a travel guide means connected thereto;



said travel guide means being connected to said frame for orienting, and adjustably and rigidly positioning, said rim engaging members independently of each other along equally angularly spaced radial linear lines in a plane perpendicular to and intersecting the axial reference of said hub, and

alignment scale means attached to said guide means for precisely and adjustably aligning each of said rim engaging members at the same selected distance from said axial reference.

3,841,380

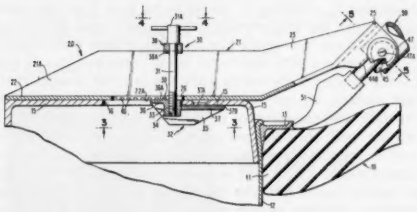
ADAPTER FOR PORTABLE POWER-OPERATED TIRE REMOVING TOOL

Don J. Marshall, Box 410 Rt. 6, Edgewater, Md. 21037

Filed Sept. 29, 1972, Ser. No. 293,313

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.26 **14 Claims**



1. An adapter for a portable power-operated tool for breaking the bond between a tire rim and the bead of a tire mounted thereon, said rim comprising an annulus including a wheel disk interiorly of said annulus and including at least one aperture therein; said adapter comprising:

a beam for contacting a said rim and including an axially extending slot therein;

axially slidable clamping means passing through said slot in said beam and a said aperture in a said wheel disc and including means to adjustably clamp said clamping means to said beam to inhibit vertical and horizontal displacement of said clamping means relative to said beam while permitting said beam to freely rotate about the central aperture of said wheel disk;

an offset portion extending from said beam and including a yoke, and means for clamping said tool to said yoke.

3,841,381

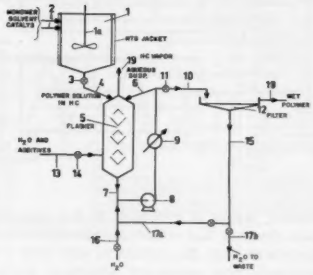
APPARATUS FOR PRODUCING AND RECOVERING RUBBERY OR STICKY POLYMERS

Pierre Dassesse, Jemeppe-Sur-Sambre, and Marius Delwiche, Auvelais, both of Belgium, assignors to Solvey & Cie, Brussels, Belgium

Continuation of Ser. No. 874,581, Nov. 6, 1969, abandoned. This application Apr. 21, 1972, Ser. No. 246,492

Int. Cl. B01d *1/28, 1/22, 1/26*

U.S. Cl. 159—2 R **11 Claims**



1. Apparatus for producing and recovering rubbery or sticky polymers comprising a reactor for polymerizing one or more monomers in a medium of volatile liquid hydrocarbon, and a recovery system comprising a flashing column comprising a tower provided along a portion only of its height with superposed diverging deflecting surfaces alternating with converging deflecting surfaces in the general direction of flow, means for conducting said polymers with said medium from said reactor to the top of said tower and directing it onto the uppermost of said deflecting surfaces, means for supplying water to said tower to form an aqueous suspension of said polymer, said tower having at its lower end below the lowermost deflecting surface a chamber for collecting said suspension, a recirculation circuit including pump means for withdrawing said aqueous suspension from said chamber and conduit means for conducting it to the top of said tower and directing it onto the uppermost of said deflecting surfaces together with said polymer in said medium to direct said suspension and polymer in a cascade down over successive deflecting surfaces to said chamber at the lower end of said tower, means for withdrawing from said system a selected amount of said suspension corresponding in polymer content to the polymer conducted to said tower from said reactor, means for processing the withdrawn suspension to remove separately the polymer and water therefrom, means for introducing into said system make-up water in an amount corresponding to the amount of water withdrawn and means for discharging vapor of said medium from the top of the tower.

3,841,382

GLYCOL REGENERATOR USING CONTROLLER GAS STRIPPING UNDER VACUUM

Charles K. Gravis, III, and Robert A. Hodgson, both of Tulsa, Okla., assignors to Maloney-Crawford Tank Corporation, Tulsa, Okla.

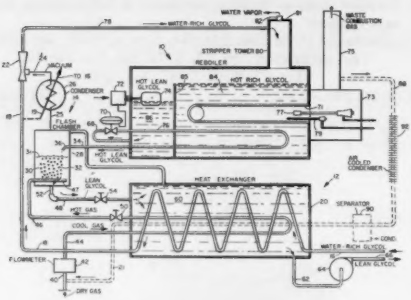
Filed Mar. 16, 1973, Ser. No. 341,990

Int. Cl. B01d *1/14;* **C07c** *29/26;* **B01d** *1/00, 53/02*

U.S. Cl. 159—16 R **6 Claims**

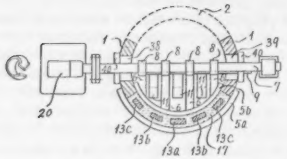
1. Apparatus for the reconcentration of a relatively cool liquid absorbent that is rich with solute acquired in the process of drying a stream of gas comprising:

a. reboiler means into which the rich absorbent stream is introduced and including means to heat said absorbent to a temperature below its point of disintegration;
b. means to remove from the reboiler water vapor and gas which is released from the absorbent;
c. a flash chamber separated from said reboiler including: means to apply vacuum at the top end thereof, means to introduce dry hot gas into said chamber near the base



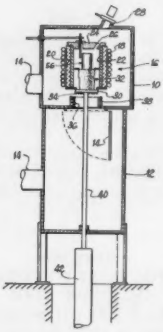
thereof, means to introduce the hot lean absorbent into said chamber, and means to remove the reconcentrated absorbent from the bottom of said flash chamber, said relatively cool water-rich absorbent being heated by indirect heat exchange with hot reconcentrated absorbent and said vacuum being generated by the flow of the preheated water-rich absorbent stream thru a venturi eductor prior to passing into said reboiler, the throat of said venturi being connected to the vapor space of said flash chamber.

3,841,383
METHOD FOR MANUFACTURING CURVED WALL METALLIC OBJECTS
Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 16, 1972, Ser. No. 281,761
Claims priority, application Japan, Aug. 25, 1971, 46-64365
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **1 Claim**



1. A method for manufacturing at least one curved wall metallic object, comprising:
a. establishing a mould constituted by an arcuate radially outer side, an arcuate radially inner side, a metallic left end of circular perimeter, a metallic right end of circular perimeter and a metallic floor initially constituted by a start piece, to define a hollow space having an arcuate, generally rectangular horizontal transverse cross-sectional shape;
b. continuously feeding metallic electrode elements and flux into the hollow space along the whole length of said hollow space, while coordinately rotating the mould left end, right end and floor circularly through less than 360° about a horizontal axis centered on said left and right ends in an angular sense tending to make room in the hollow space for accommodating more of said feeding; while
c. leading a welding current through the slag bath in said hollow space to continuously form deposited metal on the floor and both said right and left ends by electro-slag re-melting within said hollow space, thus connecting the left and right ends together to produce a hollow metallic object;
characterized in that
d. the left and right ends are part-spherical and wherein the radially inner and radially outer sides of the mould are circularly curved to complement the left and right ends, whereby the metallic object formed by conducting steps (*a*) and (*b*) and (*c*) is substantially spherical.

3,841,384
METHOD AND APPARATUS FOR MELTING AND CASING METAL
Stanley C. Tingquist, Sparta, and Edward G. Laux, Wayne, both of N.J., assignors to Howmet Corporation, Greenwich, Conn.
Filed Feb. 21, 1973, Ser. No. 334,264
Int. Cl. B22d *25/06*
U.S. Cl. 164—60 **16 Claims**

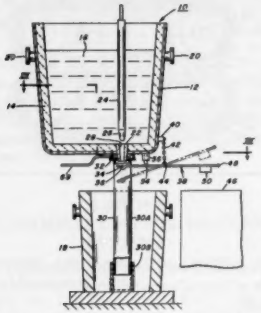


1. In an apparatus for producing castings wherein molten metal is introduced into a preheated mold and the metal is directionally solidified by withdrawing heat from the bottom of the mold, the improvement wherein said mold defines a flat upper surface, a crucible having a flat bottom wall supported on said surface with said metal being contained in said crucible for melting of the metal while the crucible is supported on said surface, an opening defined by the bottom wall of said crucible, the engagement of said flat upper surface and flat bottom wall normally preventing passage of metal through said opening, at least one passage defined by said mold and communicating with said surface of the mold for the passage of molten metal into the mold, and means for tipping said crucible whereby molten metal therein passes through said crucible opening into said top surface for passage into said mold.

3,841,385
METHOD AND APPARATUS FOR TEEMING STREAM PROTECTION
David L. Burk, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed Mar. 1, 1972, Ser. No. 230,797
Int. Cl. B22d *21/02*
U.S. Cl. 164—66 **11 Claims**

1. In the method for teeming molten metal into a mold, the steps of placing in a mold a consumable, vertically-extending

and gas-tight metal sheath device including upper and lower open-ended telescoping parts vertically movable with respect to one another and which will isolate a teeming stream from the surrounding air, then positioning a ladle containing molten metal over said sheath and aligning a pouring nozzle in the bottom of the ladle with the vertical axis of said sheath device, raising said upper telescoping part into engagement with a seal surrounding said nozzle while the bottom edge of the lower telescoping part remains in contact with the bottom of the



mold and a portion of the upper telescoping part remains in the mold, and thereafter discharging molten metal through said nozzle with the seal and upper telescoping part in engagement whereby the molten metal will fall through said sheath device into said mold, the upper and lower telescoping parts remaining in engagement with one another during their movement with respect to one another, said molten metal causing melting of the lower part of both telescoping parts as the molten metal rises in the mold.

3,841,386

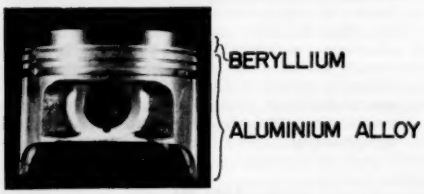
METHOD OF JOINING A BERYLLIUM WORKPIECE TO LIGHT METALS

Itaru Niimi, 4-1205, Aza-Obasama, Ohaza-Takebari, Itakacho, Chikusa-ku, Nagoya-shi; Kametaro Hashimoto, 29, Takami-cho, 5-chome, Toyota-shi; Yasuhisa Kaneko, 10, Toyota-cho, Toyota-shi; Yoshiro Komiyama, 48, Heiwa-cho 4-chome, Toyota-shi, and Kunihiko Hashimoto, 14, Miyukihon-machi 6-chome, Toyota-shi, all of Aichi-ken, Japan

Continuation-in-part of Ser. No. 130,257, April 1, 1971, abandoned. This application May 25, 1973, Ser. No. 360,645

Int. Cl. B22d *19/04*

U.S. Cl. 164—75 **6 Claims**



1. Method of manufacturing a light metal alloy casting from a solid beryllium workpiece, comprising the steps:

a. dipping the solid beryllium workpiece in a molten bath of copper or copper alloy and forming a layer of beryllium-copper alloy on the surface of the solid beryllium workpiece;

b. dipping the so-obtained beryllium workpiece in a molten bath of aluminum or aluminum alloy and forming on said surface a layer of beryllium-copper-aluminum on the beryllium workpiece;

c. setting the said solid workpiece alloy into a mold, and

d. pouring a molten light metal into the mold before the said beryllium-copper-aluminum alloy on the surface of said workpiece is solidified, thereby to form a light metal casting together with said beryllium as one body.

3,841,387

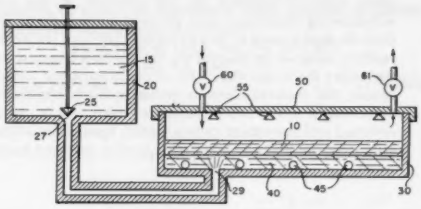
METHOD AND APPARATUS FOR CASTING METAL

Hubert Martin, Richmond, Va., assignor to Texcell Corporation, Richmond, Va.

Filed Aug. 2, 1972, Ser. No. 277,223

Int. Cl. B22d *23/00*

U.S. Cl. 164—81 **3 Claims**



1. Apparatus for casting metal material comprising a feed vessel having a controlled outlet, a virtually closed mold vessel adapted to contain a carrier liquid on which said metal material is to be cast, an inlet in said mold vessel positioned to receive said metal material from said feed vessel and deliver the same into said mold at below the normal surface level of said carrier liquid, and one or more separators or indentors positioned in said mold vessel to permit one or more castings of said metal material at one time with varied surface configurations, if desired.

3,841,388

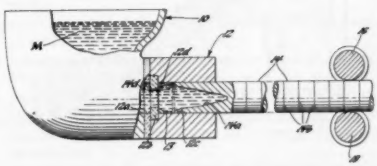
EXTRACTOR ROLL DRIVE

Robert G. Williams, Birmingham, and Richard M. Coolidge, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,559

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **5 Claims**



1. A continuous casting apparatus for ferrous metal of the type wherein the bar issues in solid form from a fixed mold and withdrawn by a roll spaced from the point of freezing of the bar in a succession of forward step movements separated by periods of dwell comparable in time to the time of the forward movements, and in which a slight reversed movement is imparted to the bar at the point of roll engagement during the dwell period, the mechanism comprising in combination:

means to impart successive forward bar-withdrawing rotations to the roll to withdraw the bar in said forward steps,

said means being characterized by inevitable and variable lost motion effects;

a two-part mechanism in constant engagement, one part being rigidly affixed to and rotatable with the roll and the other part being mounted for movement in unison with the first part under brake-engaging action, the other part defining faces which move forward and backward, respectively, as the roll withdraws or retracts the bar;

a fixed stop in the path of the forward facing face when the roll rotates in the bar-withdrawing direction, and effective to arrest travel of said other part in response to the brake action;

an adjustable stop in the path of the backward facing face when the roll rotates in the direction of reversed movement of the roll, and effective to fix adjustably the travel of the said other part in the reverse direction;

and a resilient element effective to resist travel of the said other part in response to roll rotation in the bar-withdrawing direction, said element having force less than the brake force so that (a) during forward stroke the resilient element yields until the fixed stop is engaged and thereafter the brake slips, (b) when forward bar motion ceases, the resilient element instantaneously applies reverse torque to the roll through the brake, and (c) when reversed roll movement causes seating against the adjustable stop, the brake action resists further reversed movement.

3,841,389

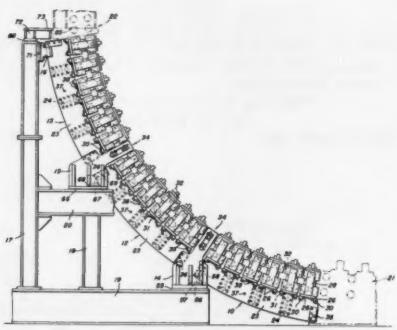
CURVED ROLL-RACK FRAME CONSTRUCTION

John J. Anderton, 21 Glenwood Dr.; Max S. Dudzic, Sage Run Rd., and Wilmer C. Wrhen, Pinoak Cir., all of Oil City, Pa. 16301

Continuation of Ser. No. 265,379, June 22, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,293

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **11 Claims**



1. A frame section for use in a curved roll-rack, said section comprising a pair of opposed side plates, transverse members joined to said plates to form a rigid structure, each of said plates having side faces and a concave edge, a plurality of pads fixed to said plates along the concave edges thereof, and reference pins carried by the respective pads and projecting therefrom in a direction transverse with respect to the planes of the side faces of said plates, said pads being adapted to support respective roll clusters with the roll axes located on the same radii of the concave edge as the respective pins, said pins serving as references for positioning the roll clusters on said pads.

3,841,390

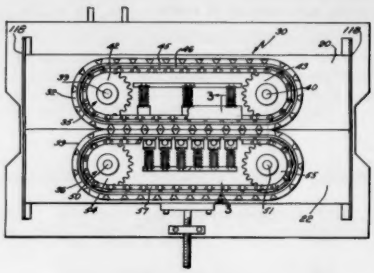
CONTINUOUS MOLDING MACHINE

Frank DiBenedetto, 7 Pasco Dr., and Louis A. Viscolosi, Jr., 5 Pasco Dr., both of Johnston, R.I. 02919

Filed Jan. 29, 1973, Ser. No. 327,305

Int. Cl. B22d *5/04*

U.S. Cl. 164—329 **2 Claims**



1. A continuous casting machine comprising a stand,

a first pair of laterally spaced shafts rotatably supported on said stand,

said shafts being positioned parallel to each other and being vertically oriented,

a first closed loop belt having a plurality of mold cavities formed in its outer face,

a first conveyor means mounted on said first pair of laterally spaced shafts with said conveyor means supportably mounting said first closed loop belt so that it passes around said shafts,

a second pair of laterally spaced shafts rotatably supported on said stand, said shafts being positioned parallel to each other and being vertically oriented,

a second closed loop belt,

a second conveyor means mounted on said second pair of laterally spaced shafts with said conveyor means supportably mounting said second closed loop belt so that it passes around said shafts,

wherein said first conveyor means comprises sprocket gears mounted on said first pair of shafts and having a chain also passing around said sprocket gears, and wherein said chain has a plurality of pressure plates mounted on its outer face that contact the inner surface of said first closed loop belt, and wherein said first closed loop belt is made of elastic material, and wherein said mold cavities are connected to a plurality of sprue cavities that extend upwardly to the top of said belt and also said sprue cavities are connected to each other by runner cavities thereby allowing multiple pieces to be cast in a continuous piece of molded material, and wherein said stand comprises a stationary plate in which said first pair of laterally spaced shafts are rotatably supported and an adjustable plate in which said second pair of laterally spaced shafts are rotatably supported for varying the lateral spacing between said stationary plate and said adjustable plate.

3,841,391

HEATING AND COOLING METHOD

Karl F. Milde, Jr., 198 Baltic St., Brooklyn, N.Y. 11201

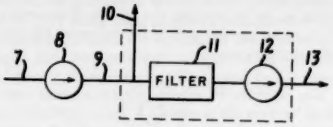
Continuation-in-part of Ser. No. 794,645, Jan. 29, 1969, abandoned, Division of Ser. No. 151,298, June 9, 1971, Pat. No. 3,777,809. This application Sept. 4, 1973, Ser. No. 393,784

Int. Cl. F21b *13/00*

U.S. Cl. 165—2 **20 Claims**

1. A process for using apparatus comprising a semi-permeable barrier-type filter means, arranged to receive a gas,

for selectively passing molecules of said gas which have a statistical distribution of molecular velocities which is different from the statistical distribution of molecular velocities of said gas, and pump means for establishing a pressure differential across said filter means; said process including the steps of



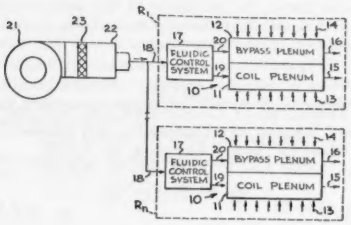
pumping molecules of said gas through said filter means, simultaneously separating said gas into respectively hotter and colder component gases, and supplying the molecules which are pumped through said filter means to a room, to thereby change the temperature of the room.

3,841,392

INDUCTION TERMINAL UNIT FOR AIR-CONDITIONING SYSTEMS

Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Inglewood, Calif.

Division of Ser. No. 158,766, July 1, 1971. This application Feb. 20, 1973, Ser. No. 334,124
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **14 Claims**



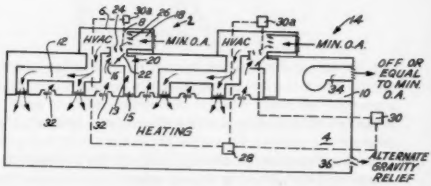
1. In an air-conditioning system in which pre-conditioned air is ducted to each of a plurality of rooms, an induction terminal system for each of said rooms that comprises: a terminal unit having at least coil and bypass plenums through which a mixture of the pre-conditioned and room air selectively flows, said coil plenum including first and second air inlet means to respectively permit entry of said pre-conditioned and room air thereto, room air being induced to enter and flow through said coil plenum only when pre-conditioned air flows therethrough, first air outlet means to permit said mixture of pre-conditioned and room air to discharge directly into the room, and a coil for conditioning room air mounted in said second air inlet means, said bypass plenum including third and fourth air inlet means to respectively permit entry of said pre-conditioned and room air thereto, room air being induced to enter and flow through said bypass plenum only when pre-conditioned air flows therethrough, and second air outlet means to permit said mixture of pre-conditioned and room air to discharge directly into the room, said coil and bypass plenums including additional means to isolate one plenum from the other in such a manner that air flowing in one will not mix with and will not affect air in the other prior to discharge into the room; and a fluidic control unit for switching the entire stream of pre-conditioned air to a selected one of said plenums in response to air-pressure signals, said fluidic control unit including a fluidic amplifier arrangement that has no moving parts for switching the stream of pre-conditioned air and that itself includes at least an inlet channel into which the pre-conditioned air stream flows, first and second outlet channels respectively coupled to said coil and bypass plenums and to which the stream of pre-conditioned air flows, and a pair of control channels through which air-pressure signals are selectively directed against said pre-conditioned air stream to switch its flow from one of said outlet channels to the other, said fluidic control unit further including air-pressure means coupled to said pair of control channels and operable in response to an appropriate signal to cause an air-pressure signal to be applied thereto to switch the flow of said pre-conditioned air stream, and thermostatic apparatus to apply said appropriate signal to said air-pressure means when the temperature in the room reaches a pre-determined level.

3,841,393

AIR CONDITIONING APPARATUS

Theodore C. Gilles, Marshalltown, Iowa, assignor to Lennox Industries Inc., Marshalltown, Iowa

Filed Sept. 4, 1973, Ser. No. 394,042
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **11 Claims**



1. An air processing system for an enclosed area comprising, in combination:

a. a plenum;

b. temperature sensing means;

c. an air processing unit communicating with said plenum and responsive to said temperature sensing means, said air processing unit having an air intake;

d. processed air means for directing the flow of processed air from said air processing unit to said enclosed area;

e. air passing light fixtures between said enclosed area and said plenum for enabling air from said enclosed area to pass in heat transfer relationship with said light fixtures into said plenum;

f. room air means for directing the flow of fresh air outside said enclosed area to said air intake of said air processing unit;

g. fresh air means for directing the flow of fresh outside air to said air intake;

h. plenum air means for directing the flow of air from said plenum to said air intake;

i. control means for regulating said room air means, said fresh air means, and said plenum air means, said control means being responsive to said temperature sensing means; and

j. exhaust means for exhausting air from said plenum said control means being operable in a heating state for closing said room air means, variably controlling said plenum air means, and variably controlling said fresh air means to minimum fresh air, said exhaust means being off or operative at as being operable in a heating state for closing said room air means, variably controlling said plenum air means, and variably controlling said fresh air means to minimum fresh air, said exhaust means being off or operative at minimum fresh air, operable in a first cooling state for controlling said room air means, closing said plenum air means, variably controlling said fresh air means to one-hundred percent fresh air, said exhaust means being

operative to one-hundred percent fresh air, and operable in a second cooling state for variably controlling said room air means, closing said plenum air means, and variably opening said fresh air means to minimum fresh air, said exhaust means being operable to minimum fresh air.

3,841,394

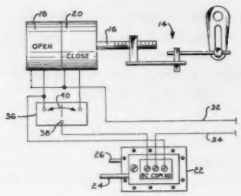
MINIMUM AIR VOLUME CONTROL DEVICE

Robert M. Van Becelaere, Shawnee Mission, Kans., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Aug. 2, 1973, Ser. No. 385,187

Int. Cl. F24f *11/04*; **G05d** *23/275*

U.S. Cl. 165—30 **4 Claims**



1. In an air distribution system for delivering conditioned airflow at a preselected substantially constant temperature to a plurality of zones wherein the temperature at each of said zones is controlled by varying the volume of airflow to said zone;

an air throttling means for varying the volume of conditioned air delivered to said zone;

an electric motor operator coupled to said air throttling means to drive the latter in opposite directions to increase and decrease the volume of airflow;

a thermally responsive thermostat control switch disposed to sense temperature in said zone and connected with said motor operator for actuating the latter to vary airflow to maintain substantially constant temperature in said zone;

a first override control switch connected to said motor operator, said first override control switch effective when actuated to override said thermostat control switch and actuate said motor operator to stop further decrease in the volume of airflow to thereby establish a minimum volume of conditioned airflow delivered to said zone, said first override switch including means for sensing the volume of airflow to said zone and for actuating said first override switch whenever said volume of airflow drops to a predetermined minimum level;

an electrically controlled heat source in said zone; and

a second override control switch connected with said heat source and operable to activate said heat source upon being actuated by said airflow sensing means whenever said volume of airflow drops to a preselected level, said preselected level of airflow being greater than said predetermined minimum level.

3,841,395

TEMPERATURE CONTROL FOR VEHICLE PASSENGER SPACE

Helmut Steinmann, Baden-Baden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 15, 1973, Ser. No. 323,515

Claims priority, application Germany, Mar. 3, 1972, 2210212

Int. Cl. G05d *23/00*

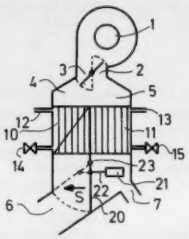
U.S. Cl. 165—35 **10 Claims**

1. A system for maintaining constant the temperature of an air space comprising:

blower means including a blower and two output ducts for delivering, respectively, two air streams of different temperatures, to a duct junction and including also means for supplying said blower with fresh air;

main delivery duct means for delivering air from said duct junction towards said air space;

mixing valve vane (**20**) means in or at said duct junction for determining by its position the relative proportion of air from said two air streams to be delivered by said main delivery duct means;



thermosensitive means (**21**) for positioning said vane means in response to the temperature of the cooler of said air streams and for decreasing, under increasing temperature of said cooler stream, the proportion of said warmer stream to be delivered through said main delivery duct and for increasing, under decreasing temperature of said cooler stream, the proportion of said warmer stream so delivered, said thermosenstive means being in the form of a positioning member connected to said vane means.

3,841,396

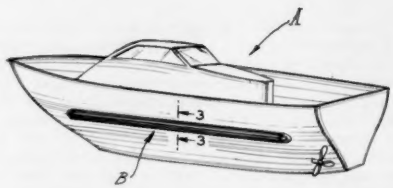
FINNED HEAT EXCHANGER AND SYSTEM

Thomas C. Knaebel, 405 Lindgate Dr., and Douglas G. Birk, 917 Mindy Ln., both of Kirkwood, Mo. 63122

Filed June 12, 1973, Ser. No. 369,225

Int. Cl. B61d *27/00*

U.S. Cl. 165—44 **2 Claims**



1. In combination with a water buoyant marine vessel incorporating an engine and cooling jacket capable of holding a supply of cooling medium, a heat exchanger mounted to the external surface of the hull of the vessel below its water line, a pair of fluid flow means connecting the proximate ends of said heat exchanger to the cooling jacket of the engine for use in transfer of the cooling medium to and from said jacket, said heat exchanger including a longitudinal member of a length to provide for its connection in a direction approximately along the length of the hull, said longitudinal member having at least one passage formed therethrough, said longitudinal member being approximately semicircular in cross section and formed having a conic-like side and a flat surface, a series of radially disposed longitudinal fins integrally formed from the conic-like side of the longitudinal member and extending into the ambient environment to enhance heat dissipation from the cooling medium, said radial fins being formed having a ta-

pered design and narrowing from their connection with and extension from the conic-like side of the longitudinal member of the heat exchanger, flanges integrally connecting to and extending diametrically from either edge of the flat surface of said heat exchanger along the length of its longitudinal member, fastening means cooperating with said flanges to secure said heat exchanger to the vessel hull, said flanges being provided with slots along their length to facilitate the positioning of said fastening means, the combined flat surface of the heat exchanger and the underside of said flanges being formed having a recess therein to provide clearance for flush mounting of said heat exchanger to the vessel hull, said heat exchanger including a pair of fittings at the ends of its longitudinal member for hermetically sealing the exchanger at the location where it connects interiorly of the hull for communicating with the fluid flow means of said cooling jacket, connectors provided for securement of said fittings to each end of the longitudinal member, each connector inserting into the end of said longitudinal member and also into the proximate fitting, a sealing ring provided between said fitting and its connector to hermetically seal the same together, both of said connectors and the fittings have passages formed therethrough communicating with the passage of the longitudinal member for accommodating the flow of the cooling medium of the engine therethrough, additional connectors attaching with the fittings and disposed for extending through the hull of the vessel, a fastening ring cooperating with each said additional connectors for hermetically sealing said heat exchanger to the vessel hull to prevent interior leakage of the ambient water.

3,841,397

HYDRODYNAMIC SORTING APPARATUS

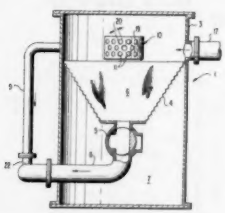
Klaus Eimer, Ratingen, Germany, assignor to Ludwig Taprogge Reinigungsanlagen fur Rohren-Warmeaustauscher, Dusseldorf, Germany

Filed Nov. 8, 1973, Ser. No. 414,099

Claims priority, application Germany, Nov. 8, 1972, 2254677

Int. Cl. F28g *13/00*

U.S. Cl. 165—95 **19 Claims**



1. A condenser system for steam turbines and the like comprising:

condenser elements,

cooling fluid circulation means extending through said condenser elements,

a plurality of cleaning balls positioned in said circulation means and entrainable by cooling fluid passing through said circulation means so as to effect a cleaning action on the condenser elements during circulation of cooling fluid through said circulation means,

and hydrodynamic sorting apparatus interposed in the circulation means for separating those of said cleaning balls which have been worn to below a predetermined reduced size from the remainder of said cleaning balls.

3,841,398

LOCAL CONDITIONING INDUCTION-TYPE APPARATUS EMPLOYING PRIMARY INLET AIR AS A POWER MEANS FOR CONTROLLING TEMPERATURE

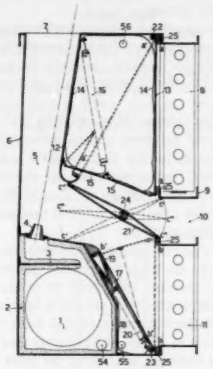
Angelo Serratto, C. S. Indipendenza, 5, Milan, Italy

Filed Feb. 27, 1973, Ser. No. 336,181

Claims priority, application Italy, Mar. 1, 1972, 21255/72

Int. Cl. F24f *3/04;* **F28f** *13/12*

U.S. Cl. 165—123 **9 Claims**



1. An induction-type air conditioning system of the type employing first heat exchanger means for cooling air, second heat exchanger means for heating air and a respective pair of pipes for each heat exchanger means to conduct temperature-treated fluid to and from said heat exchanger means, said system comprising:

a housing;

a source of primary air including: plenum means located in said housing for conducting said primary air, and nozzle means for issuing a primary air stream from said plenum means;

means defining an air flow passage in said housing, said air flow passage being positioned to receive the primary air stream from said nozzle means and to direct said primary air stream externally of said housing;

means defining an aspiration opening into said air flow passage, said aspiration opening being oriented to permit secondary air to be aspirated therethrough by said primary air stream flowing in said air flow passage;

means defining first, second and third air inlets into said housing, said first heat exchanger means being positioned in the path of said first air inlet to cool air entering said housing via said first air inlet, said second heat exchanger means being positioned in the path of said second air inlet to heat air entering said housing via said second air inlet, said third air inlet serving as a by-pass inlet to permit entry of untreated air into said housing;

first actuable damper means movable between extreme opened and closed positions to proportion air inflow through said first air inlet and having a front surface configured to block air flow through said first air inlet when said first damper means is in its closed position, said first damper means also including a rear surface;

first bias means for continuously urging said first damper means towards its opened position;

a first actuator compartment located in said housing and defined on at least one side by the rear surface of said first damper means;

first inflatable and expansible actuator means disposed in said first compartment for urging said first damper means towards its opened position to a degree determined by the degree of inflation of said first actuator means;

second actuable damper means movable between extreme opened and closed positions to proportion air inflow through said second air inlet and having a front surface configured to block air flow through said second air inlet when said second damper means is in its closed position, said second damper means also including a rear surface; second bias means for continuously urging said second damper means towards its opened position;

a second actuator compartment located in said housing and defined on at least one side by the rear surface of said second damper means;

second inflatable and expansible actuator means disposed in said second compartment for urging said second damper means towards its opened position to a degree determined by the degree of inflation of said second actuator means;

control means for controllably inflating and deflating said first and second actuator means with primary air, said control means including thermostatic valve means responsive to the temperature in an environment being conditioned by said primary air stream for inflating one and deflating the other of said first and second actuator means with primary air;

third actuable damper means movable to two extreme closed positions through an opened position to proportion air inflow through said third air inlet;

linkage means for connecting said first and second damper means to said third damper means such that said third damper means is in its opened position and permits maximum air flow through said third air inlet when both of said first and second damper means are closed.

3,841,399

SECONDARY OIL RECOVERY

Roger C. Ryan, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,724
Int. Cl. E21b *43/27*
U.S. Cl. 166—300 **2 Claims**

1. In a method of recovery of petroleum at an oil well, the improvement comprising: pumping concurrently into a producing well or an injection well an aqueous synthetic emulsion copolymer consisting of acrylonitrile and ethyl acrylate, and caustic which produces down-hole hydrolysis of the emulsion copolymer.

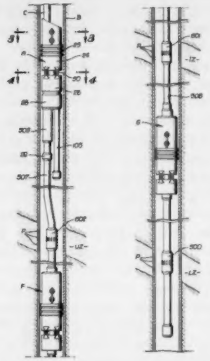
3,841,400

SELECTIVE HYDROSTATICALLY SET PARALLEL STRING PACKER

Rudy B. Callihan, Houston, and Clyde S. Wainwright, Jr., Bellaire, both of Tex., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Mar. 5, 1973, Ser. No. 338,152
Int. Cl. E21b *23/06, 33/122*
U.S. Cl. 166—120 **15 Claims**

1. In apparatus adapted to conduct fluids through a plurality of tubular strings extending to the top of a well bore: a plurality of packers adapted to be disposed in the well bore; a tubing extending between and secured to said packers to hold said packers in longitudinally spaced relation, said packers including an upper packer having substantially parallel passages therethrough, a first of said parallel passages communicating through said tubing with a corresponding passage in a lower of said packers; a first tubular string secured to said upper packer for lowering all of said packers in the well bore to selected setting locations therewithin, said tubular string communicating with said first passage; said upper and lower packers each including normally retracted means and fluid operated means communicating with and responsive to the hydrostatic head of fluid in said first passage and corresponding passage, respectively, for expanding said normally retracted means of each packer outwardly into engagement with the wall of the well bore; said upper packer having first means in said first passage for preventing fluid pressure from passing from said first passage to said fluid operated means of said upper packer, said lower packer having second means in said corresponding passage for preventing fluid pressure from passing from said corresponding passage to said fluid operated



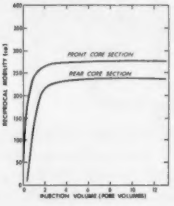
means of said lower packer; and operating means movable through said first tubular string selectively into engagement with said first means and second means for selectively shifting said first means and second means separately and sequentially to positions permitting fluid pressure to pass from said first passage and corresponding passage to the fluid operated means of said upper packer and the fluid operated means of said lower packer.

3,841,401

PROCESS FOR RECOVERING HYDROCARBON USING POLYMER OBTAINED BY RADIATION POLYMERIZATION

Alfred J. Restaino, and William W. Bristowe, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,739
Int. Cl. E21b *43/22*
U.S. Cl. 166—247 **16 Claims**



1. A process for recovering hydrocarbon from a subterranean reservoir having an injection means in fluid communication with a production means, the process comprising injecting into the subterranean reservoir an aqueous solution comprised of a water-soluble polymer obtained by high energy ionizing radiation polymerization of at least one monomer selected from the group consisting of acrylamide and methacrylamide and at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, alkali metal acrylate, and alkali metal methacrylate in concentrations of about 10 percent to about 60 percent by weight dissolved monomer

in an aqueous medium, the radiation intensity is about 250 to about 1,000,000 rads/hr. and the radiation dose is from about 500 rads to about 300,000 rads, and displacing the polymer toward the production means to recover crude oil therethrough.

3,841,402

FRACTURING WITH RADIATION-INDUCED POLYMERS

Bruce L. Knight; John S. Rhudy, and William B. Gogarty, all of Littleton, Colo., assignors to ICI America Inc., Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,735
Int. Cl. E21b *43/26*
U.S. Cl. 166—247 **27 Claims**

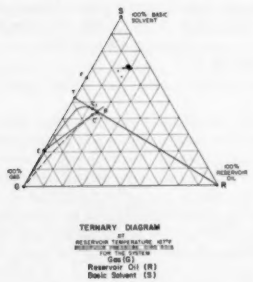
1. An improved process of fracturing a subterranean formation penetrated by at least one injection means and wherein a fracturing fluid comprised of a high molecular weight polymer is injected into at least a portion of the formation at sufficient pressure and rate to fracture the formation, the improved process comprising incorporating into the water phase of the fracturing fluid of polymer obtained as a product of high energy ionizing radiation polymerization of at least one monomer selected from the group consisting of acrylamide, methacrylamide, acrylic acid, methacrylic acid, alkali metal acrylate, and alkali metal methacrylate, in concentrations of about 10 to about 60 percent by weight dissolved monomer in an aqueous medium, the radiation intensity being about 250 to about 1,000,000 rads/hr and the radiation dose being about 500 rads to about 300,000 rads, and thereafter injecting the fracturing fluid into at least a portion of the formation at a sufficient pressure and rate to fracture the formation.

3,841,403

MISCIBLE FLOOD PROCESS FOR OIL RECOVERY USING A LEAN GAS

David B. Burnett, Houston, and Robert B. Alston, Missouri, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 23, 1972, Ser. No. 265,946
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **3 Claims**



TERNARY DIAGRAM
AT
RESERVOIR TEMPERATURE 40°F
RESERVOIR PRESSURE 1200 PSIA
FOR THE SYSTEM
Gas (G)
Reservoir Oil (R)
Basic Solvent (S)

1. A process for recovering oil from an oilbearing reservoir, said oil having asphaltene and nonasphaltene components, and said reservoir being traversed by at least one injection well and one production well, comprising the steps of:

a. injecting into said reservoir via said injection well a gaseous displacing agent comprising a mixture of substantially methane and also including hydrocarbons having from 2 to 6 carbon atoms per molecule that is capable of precipitating said asphaltene components and forming a miscible transition zone with said non-asphaltene components of said oil, said gaseous displacing agent being injected in sufficient quantity to precipitate said asphaltene components and form a transition zone with said non-asphaltene components at the temperature and pressure of said reservoir,

b. injecting into said reservoir via said injection well a driving agent that is capable of forming a miscible transition zone with said gaseous displacing agent, said driving agent being injected in sufficient quantities to form a transition zone with said gaseous displacing agent, and

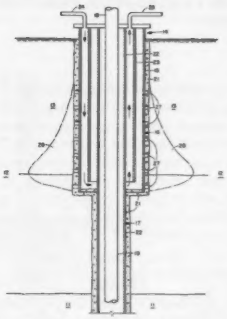
c. continuing injection of said driving agent to displace said oil toward said production well from which said oil is produced.

3,841,404

SUBSIDENCE CONTROL PROCESS FOR WELLS PENETRATING PERMAFROST

Richard A. Harmon, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 2, 1973, Ser. No. 370,124
Int. Cl. E21b *33/13, 43/24*
U.S. Cl. 166—292 **10 Claims**



1. A process for controlling subsidence in well bore penetrating a permafrost region comprising contacting the permafrost adjacent the well bore with a hydrate forming fluid so that solid hydrates having a melting point above that of the ice in the permafrost are formed as the permafrost melts.

3,841,405

SUBSURFACE FORMATION TREATMENT

Truman P. Moote, and Roscoe F. Vandaveer, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed May 22, 1973, Ser. No. 362,724
Int. Cl. E21b *33/13*
U.S. Cl. 166—294 **10 Claims**

1. A method of treating a highly permeable underground zone penetrated by a well which comprises:

injecting formaldehyde through said well into said zone;

injecting H_2S into said zone through said well whereby a gel is formed in-place in the zone from the reaction of the H_2S contacting the formaldehyde.

3,841,406

SINGLE WELL OIL RECOVERY METHOD USING CARBON DIOXIDE

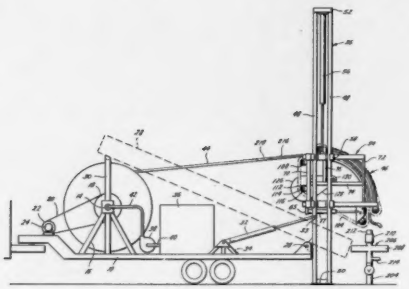
David B. Burnett, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed May 17, 1972, Ser. No. 254,012
Int. Cl. E21b *43/16, 43/25*
U.S. Cl. 166—305 R **8 Claims**

1. A method of recovering oil from an oil-bearing subterranean reservoir penetrated by at least one well which comprises the steps of:

a. injecting via said well a gas having limited solubility in said oil and selected from the group of methane, natural gas, separator gas and mixtures thereof in an amount sufficient to establish in said formation in the vicinity of said well a pressure differential that is capable of providing a driving force to drive said oil to said well on subsequent production;
b. thereafter injecting via said well a slug of carbon dioxide into said formation in an amount sufficient to establish in the vicinity of said well a zone of oil saturated with carbon dioxide;
c. shutting-in said well;
d. thereafter producing said well and recovering said oil from said formation.

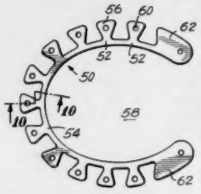
3,841,407
COIL TUBING UNIT
John F. Bozeman, 12710 Old Oaks, Houston, Tex. 77024
Filed Jan. 2, 1973, Ser. No. 320,051
Int. Cl. E21b *33/03*; B65h *75/00*
U.S. Cl. 166—315 **26 Claims**



1. Apparatus for running a continuous length of coiled substantially inflexible tubing into a well, comprising a reel for carrying said coiled tubing and tubing feeding means wherein the improvement comprises
a curved track lying in a vertical plane, said track having an inlet end opening toward said reel and an outlet end extending substantially vertically downwardly,
powered tubing gripping means movable along said track from said inlet end to said outlet end, and
pressure means overlying said track and having means thereon to engage said tubing to urge said tubing into gripping engagement with said tubing gripping means, said pressure means comprising fluid pressure actuable means adapted to provide substantially uniform pressure of engagement of said gripping means with said tubing from said inlet end to said outlet end.

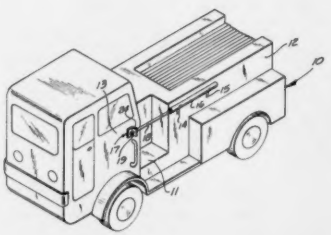
3,841,408
HORSESHOES
Louis Bucalo, Holbrook, N.Y., assignor to Shods, Inc., New York, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,861
Int. Cl. A01l *1/04*
U.S. Cl. 168—7 **7 Claims**

1. A horseshoe comprising elongated means of substantially U-shaped configuration adapted to be attached to a hoof, said elongated means being composed of a pair of opposed free end portions and a series of identical portions distributed successively one after the other along said elongated means from one of said free end portions to the other of said free end portions, and said portions being directly interconnected in an identical manner one to the next for movement with respect to each other substantially radially toward and away from a central area around which said elongated means extends, so that said elongated means can expand and contract away from and toward said central area in response to impact forces and so that said elongated means can expand in conformity with growth of the hoof to which said elongated means is attached, said series of identical portions and pair of opposed free end portions all of which are identically interconnected with each



other forming the entire horseshoe, said portions of said elongated means being hingedly connected to each other, and said portions of said elongated means overlapping each other and being formed at their overlapping portions with aligned openings, said elongated means including tubular hinge elements extending through the aligned openings of said portions for hingedly connecting them to each other while permitting nails to extend through said hinge elements for fastening the elongated means to a hoof.

3,841,409
JUMP SEAT SAFETY BAR
William Rynsky, 230 Woodbury Rd., Syosset, N.Y. 11797
Filed Nov. 9, 1973, Ser. No. 414,283
Int. Cl. A62c *27/00*
U.S. Cl. 169—24 **10 Claims**



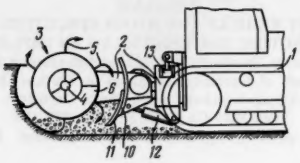
1. Apparatus, comprising:
a. a fire engine having a station for a fireman between a pair of substantially vertical walls;
b. a sleeve connected to one of the vertical walls;
c. a bracket connected to the other of the vertical walls;
d. an elongated member slidable within said sleeve; and
e. coupling means fixed to an end of the elongated member and engagable with the bracket for holding a section of the elongated member between the vertical walls.

3,841,410

EARTH-MOVING AND PLANING MACHINE OPERABLE ON THE SIDES OF HILLS AND MOUNTAINS

Vladislav Iosifovich Nikitin, Institutskaya ulitsa, 10, kv. 11, Pushino Moskovskoi Oblasti, and Nikolai Pavlovich Eltsov, ulitsa Kirova, 37, Moskovskaya Oblast, both of U.S.S.R.

Filed Mar. 5, 1973, Ser. No. 338,222
Int. Cl. A01b *33/02, 35/13*
U.S. Cl. 172—49 4 Claims



1. An earth moving and planing machine for working on mountain slopes and the like to form a terrace thereon defining an upwardly inclined bank, a downwardly inclined bank and a substantially level surface therebetween, said machine comprising:

a chassis provided with motive power means;

frame means cantilevered for movement at the front part of said chassis;

work-performing means mounted on said chassis having a rotatable first shaft with a plurality of cutting teeth disposed therealong for loosening ground to shape the level surface of the terrace, and a screw conveyor means arranged between said cutting teeth for conveying the loosened ground in a longitudinal direction of said first shaft to one end thereof, to form the downwardly inclined bank of the terrace, said teeth extending beyond the outermost working edge of said screw conveyor means;

transmission means mounted on said frame means and coupled to said motive power means for driving said work-performing means;

a second shaft pivotally coupled to the other end of said first shaft for rotatable and inclinable movement therewith and thereto respectively and having a plurality of cutters for shaping the upwardly inclined bank of the terrace to a predetermined inclination relative to the level surface thereof;

a blade assembly rigidly mounted parallel to said first shaft on said frame means rearwardly of said work-performing means relative to the forward operating movements of said machine when forming the terrace, said blade assembly having a cutting edge having means for adjustably mounting the same on said blade assembly for varying the thickness of ground loosened by said work-performing means and remaining on the level surface of the terrace formed thereby.

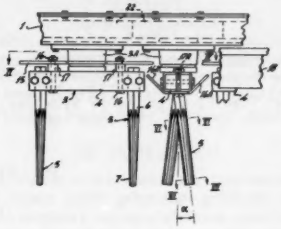
3,841,411

CULTIVATOR AND TINES

Ary Van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, Netherlands

Division of Ser. No. 172,511, Aug. 17, 1971, Pat. No. 3,774,689. This application Oct. 16, 1972, Ser. No. 297,671
Int. Cl. A01b *33/06*
U.S. Cl. 172—111 3 Claims

1. A cultivator comprising at least one soil-working member of said cultivator, said soil-working member comprising a support on a shaft rotatable about an upwardly extending axis, tine means secured to said support and depending downwardly towards the ground, sid tine means being offset from said shaft and positioned to trace a circular path on the ground during rotation, said tine means including a tine having an upper fastening portion secured to said support and a lower straight soil-working portion being inclined and extending downwardly in a trailing position with respect to the intended direction of rotation, said soil-working portion having sides comprising concave grooves and said sides having rounded corners therebetween and terminating in a tip, said soil-working portion being gradually flattened towards said tip, the cross-section of said soil-working portion having two relatively



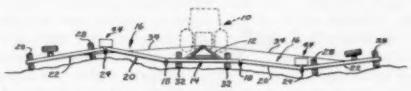
perpendicular diagonal measurements which vary from one another along the length of said soil-working portion, one of said measurements being progressively longer than the other towards said tip, and said one diagonal measurement extending substantially tangentially with respect to a circle centered upon the axis of rotation of said shaft, whereby said soil-working portion is sufficiently strong to be moved through hard soil and said tine prepares a strip of soil with a crumbled surface during operation.

3,841,412

MULTIPLE-PIECE WING SECTIONS FOR CULTIVATOR AND SELECTIVELY LOCKING MEANS FOR SAME

Harry Sosalla, Sac City, Iowa, assignor to Royal Industries, Inc., Sac City, Iowa

Filed Dec. 18, 1972, Ser. No. 316,231
Int. Cl. A01b *15/14*
U.S. Cl. 172—311 8 Claims

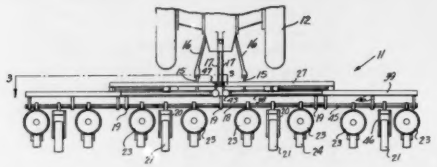


1. A farm implement of the foldable, sectional tow type comprising a wheeled cart bearing a central tool supporting section and mounting said central section for movement about a generally horizontal axis between a work performing position and a transport position; and a pair of tool supporting wing sections, one on each side of said central section, each wing section being hingedly connected to said central section and movable therewith between said transport position and said work performing position and having at least two differing portions, each of said wing sections being flexible so as to permit movement of at least one portion of each wing section relative to another portion thereof to allow each wing section, when in the work performing position, to flex to conform to the contour of the underlying terrain whereby the length of each wing section can be maximized to thereby maximize the width of swath of the implement when said central section and said wing sections are in said work performing position, and means for effectively rigidifying said wing sections to preclude said portions of the same from oscillating relative to each other when said wing sections are in said transport position.

3,841,413
TRACTOR ATTACHMENT BAR ASSEMBLY WITH RETRACTABLE PORTIONS

William M. Applewhite, Route 2, Batesville, Miss.

Filed May 25, 1973, Ser. No. 363,955
Int. Cl. A01b 63/00
U.S. Cl. 172—311 10 Claims



1. A tool-carrying attachment for a tractor comprising transversely extending upstanding frame means, means to connect said frame means to a tractor, a main tool bar, means rigidly securing said main tool bar in parallel relation to said upstanding frame means, transversely extending guide means movably connected to said upstanding frame means, said guide means extending substantially parallel to said main tool bar, means mounted on said frame means to selectively raise and lower said transversely extending guide means on said upstanding frame means, a transversely extending support member engaged with said guide means and having means for constraining said support member to move parallel to said main tool bar, a transversely extending auxiliary tool bar rigidly secured to said support member, and means connected to said guide means to selectively move said support member in either direction along said guide means.

3,841,414
GARDEN TOOL

William L. Perkins, 64 A Sunnyside Ave., Holden, Mass. 01520

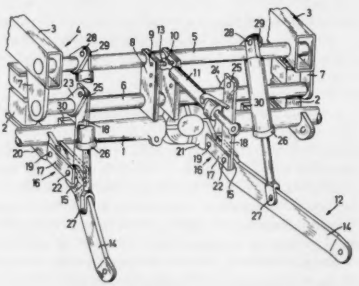
Filed Dec. 22, 1972, Ser. No. 317,619
Int. Cl. A01b 1/16
U.S. Cl. 172—371 1 Claim

1. A garden tool, comprising:
a. an elongated, plate-like shaft having a first end, a second end, and a side surface,
b. a handle fixed to the first end, and
c. a plate-like projection fixed to and extending from the second end of the shaft, the projection having upper and lower edges and a plane surface facing the handle and the longitudinal dimension of the projection being perpendicular to the said side surface of the shaft, and the projection having a cutting edge on the lower edge parallel to the longitudinal dimension of the projection and facing the handle, the plane surface of the projection forming an angle of 135° with respect to the edges of the shaft, so that the cutting edge is directed toward the handle, the projection having a pointed outer end formed from two inwardly-inclined edges meeting at the midpoint between the upper and lower edges, the shaft and projection being formed by bending a single piece of plate.

3,841,415
DRAFT VEHICLE AND HITCH STRUCTURE FOR CONNECTING THE VEHICLE TO AN IMPLEMENT

Walter Koenig, Bergisch Gladbach, and Heribert Adams, Rosrath, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Kohn-Deutz, Germany

Filed May 10, 1973, Ser. No. 359,193
Claims priority, application Germany, May 13, 1972, 2223416
Int. Cl. A01b 0/43
U.S. Cl. 172—439 6 Claims



1. In a hitch device for hitching an implement to a draft vehicle which has an axle and a frame spring mounted on the axle; said hitch device comprising; a generally horizontal upper link having one end pivoted to the vehicle frame, and the other end adapted for a pivotal connection to the implement, laterally spaced generally horizontal lower links each having one end adapted for pivotal connection to the implement, generally horizontal connecting links each having one end pivoted to the vehicle axle and the other end pivoted to the other end of a respective said lower link, lift means pivotally connected at the lower end to each said lower link between the ends thereof and extending upwardly therefrom and adapted for pivotal connection at the upper end to the vehicle frame, and further means connected between the vehicle frame and said connecting links and transmitting vertical movement of said frame on said axle to the pivotal interconnection of said lower links with said connecting links.

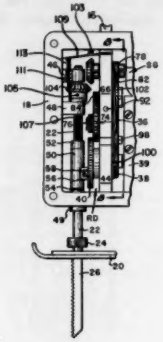
3,841,416
PORTABLE JIG-SAW AND SPINDLE SANDER

Herbert R. Pfister, Stony Brook, N.Y., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 15, 1972, Ser. No. 280,745
Int. Cl. B27b 11/00
U.S. Cl. 173—31 3 Claims

1. A portable electric tool comprising a housing having a rotary electric motor therein, a horizontal shoe plate supported upon said housing beneath said motor and adapted to support said tool for movement over a workpiece, said housing including a generally horizontal handle disposed above said motor, switch means associated with said handle for control of said motor, and a power train within said housing

and interconnecting said motor and an output shaft, said power train including manually operable selector means for converting the motion of said output shaft from relatively high



speed reciprocation through a given stroke length to rotation and relatively low speed reciprocation through said given stroke length without requiring motor speed variation.

3,841,417

PLATE BORING DEVICE

Lawrence G. Crawford, Jr., 10104 Fernglen Ave., Los Angeles, Calif. 91042

Filed July 26, 1973, Ser. No. 382,969
Int. Cl. E21c *9/00, 11/00*
U.S. Cl. 173—31 **8 Claims**

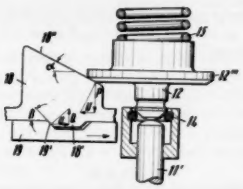
1. In a self locating drilling apparatus for
locating the drilling site of a hole in a work piece with respect to a previously installed foundation bolt, the combination comprising:
a powered drill motor having a chuck mechanism rotatably mounted with respect to a fixed housing;
a drill having a fluted cutting drill end and a straight shank at its other end detachably carried and rotated by said chuck;
an outer sleeve fixedly carried on said housing and coaxial with respect to said drill;
an inner sleeve slidably mounted within said outer sleeve and disposed about said drill;
stop means cooperatively mounted between said outer and said inner sleeves for limiting sliding movement between said sleeves;
resilient means operably mounted between said sleeves normally urging said inner sleeve away from said outer sleeve whereby a predetermined length of said inner sleeve extends from and beyond said outer sleeve; and
alignment means secured to said inner sleeve length extending beyond said outer sleeve for registering with said foundation bolt whereby said drill starts said hold at a desired location.

3,841,418

HAMMER DRILLS

Horst Biersack, Ansbach, Germany, assignor to Firma "Impex-Essen" Vertrieb von Werkzeugen GmbH, Ansbach, Germany

Filed Dec. 15, 1972, Ser. No. 315,425
Claims priority, application Germany, Dec. 28, 1971, 2165066
Int. Cl. B25d *11/00*
U.S. Cl. 173—109 **3 Claims**



1. A hammer drill having a hollow spindle for receiving a drilling tool, a drive shaft arranged to rotate the spindle and extending parrallel thereto, a striker member receivable in the spindle, and a ballistic cam on the drive shaft arranged to be rotated thereby to cause the striker member to be cyclically withdrawn against a spring and released to effect a striking action; the striker member being arranged to advance beyond the normal striking position on removal of the tool from a workpiece and thereby prevent rotation of the ballistic cam; said ballistic cam being rotatable and axially displaceable on the drive shaft and urged by a second spring towards coupling engagement with a coupling member having clutch dogs and said ballistic cam having sides inclined at an angle to a plane transverse to the drive shaft greater than the angle between the plane and surfaces of the ballistic cam and of the striker member which slidably engage during the withdrawal of the striker member.

3,841,419

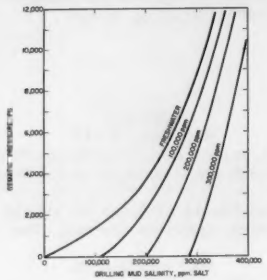
CONTROL OF COLLIGATIVE PROPERTIES OF DRILLING MUD

Kenneth L. Russell, Tulsa, Okla., assignor to Cities Service Oil Company, Tuska, Okla.

Continuation-in-part of Ser. No. 211,566, Dec. 23, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,561
Int. Cl. E21b *21/04*
U.S. Cl. 175—40 **16 Claims**

1. A process for balancing osmolality of the aqueous phase of a drilling mud with the osmolality of the interstitial aqueous phase of a subterranean formation penetrated by a wellbore which comprises solubilizing sufficient of a composition comprising a soluble carbohydrate having colligative properties

into the aqueous phase of the drilling mud that osmotic difference between the aqueous phase of the drilling mud and the



interstitial aqueous phase of the subterranean formation is less than sufficient to drive aqueous liquid from the drilling mud into the formation.

3,841,420

DIRECTIONAL DRILLING MEANS

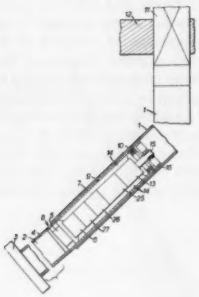
Michael King Russell, 3 Culross Close, Cheltenham, England

Filed Mar. 21, 1973, Ser. No. 343,458

Claims priority, application Great Britain, Mar. 24, 1972, 13796/72

Int. Cl. E21b *7/08*

U.S. Cl. 175—45 **8 Claims**



1. Drilling means for directional drilling in a borehole, comprising a drill pipe and a drilling head the orientation of which determines the direction of deviation of the borehole, a bearing by means of which said head is rotatably carried by the drill pipe for orientation, a tool-driving motor mounted in said head and a drilling tool coupled to the motor to be driven thereby so that, when the drilling tool is loaded in use, said head is subject to a tool reaction torque tending to rotate the head to change the orientation thereof, means for controllably counteracting the tool reaction torque and control means operative upon the counteracting means whereby the orientation of the head may be held at an adjusted setting.

3,841,421

APPARATUS FOR BORING A PIT

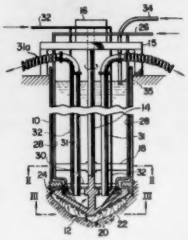
Kunijiro Matsushita, Toyokawa, Japan, assignor to Kumagai Gumi Company Limited, Fukui-shi, Japan

Filed Mar. 28, 1973, Ser. No. 345,806

Claims priority, application Japan, Nov. 11, 1972, 47-112538

Int. Cl. E21b *21/00*

U.S. Cl. 175—212 **2 Claims**



1. An apparatus for boring a pit in earth comprising in ccombination a cylindrical hollow body (**10**), a rotary cutting means having a cutter head (**12**) projecting over the bottom end of said hollow body and a drive shaft (**14**) coaxially extending through said hollow body from the center of said cutter head, said drive shaft being rotably supported at the lower portion thereof by bearing means (**18**) secured to said hollow body, said cutter head having radially extending spider arms (**22**) which supports a plurality of cutter blades (**20**), motor means (**16**) connected to said drive shaft (**14**) to rotate said cutter head, water spray nozzle means including a circular tube (**30**) disposed at the adjacent upper area of said cutter head and formed with a plruality of nozzle openings (**24**) directed substantially downwardly for discharging a water jet through said spider arms and water conduit means (**28**) disposed in the interior of said hollow body for conducting saids circular tube to a source of pressurized water disposed on the ground, an air lift pipe (**31**) having one end open adjacent the upper area of said cutter head and the other end communicating with a discharging spot on the ground, an air supply conduit (**32**) connected at one end to the lower portion of said air lift pipe and at the other end to a source of pressurized air, and a water supply pipe (**34**) for supplying water to the interior of said hollow body.

3,841,422

DYNAMIC ROCK BIT LUBRICATION SYSTEM

Morgan LeVon Crow, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 23, 1973, Ser. No. 408,986

Int. Cl. E21b *9/08, 9/35*

U.S. Cl. 175—229 **4 Claims**

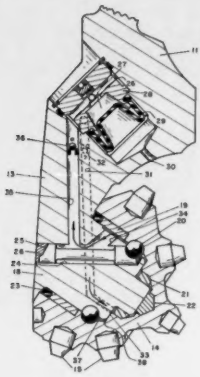
1. In an earth boring bit including a bit body with a bearing pin extending from said bit body, a rotatably cutter mounted upon said bearing pin, bearing means between said bearing pin and said cutter, and a lubricant circulation system, comprising:

a lubricant reservoir in said bit body;

first passage means for channeling lubricant from said lubricant reservoir to said bearing means;

second passage means for channeling lubricant from said bearing means to said lubricant reservoir;

valve means for providing one-way flow of lubricant in said first passage means and said second passage means, and



seal means between said cutter and said bit body for providing a positive seal between said cutter and said bit body.

3,841,423

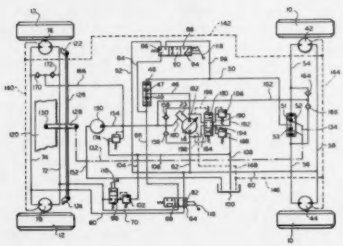
HYDROSTATIC PROPULSION SYSTEM

Donald A. Holtkamp, and Willard L. Chichester, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 220,281, Jan. 24, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,768

Int. Cl. B60k *17/30*

U.S. Cl. 180—6.3 **31 Claims**



1. A hydrostatic power transmission system for a vehicle having first and second pairs of selectively driveable wheels comprising hydraulic fluid drive means, first and second pairs of selectively driveable hydraulic motor means for driving respective pairs of said wheels and adapted to be driven by said fluid drive means, said fluid drive means also being adapted to distribute the hydraulic fluid to drive said first and second pairs of motor means when all said motor means are driving said wheels, and control means operatively connected to said fluid drive means for interrupting the flow of fluid to one pair of said motor means and redirecting it to the other pair of said motor means to effect a shift from four to two-wheel drive without interrupting the flow of traction fluid to said other pair of motor means, said control means including transition control means operative to redirect to the low pressure side of the system the fluid flow to said one pair of motor means to facilitate smooth vehicle operation during the transition from four to two-wheel drive.

3,841,424

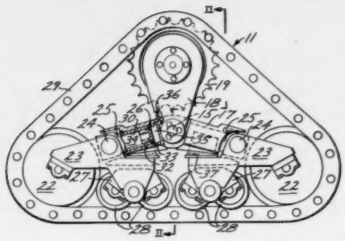
TRIANGULAR TRACK RESILIENT BOGIE SUSPENSION

Robert J. Purcell, Washington, and Kenneth E. Wehr, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 212,396, Dec. 27, 1971. This application June 22, 1973, Ser. No. 372,829

Int. Cl. B62d *65/12*

U.S. Cl. 180—9.5 **14 Claims**



1. A vehicle supporting and driving assembly for a vehicle having an axle housing and a drive axle in the axle housing comprising:

a main pivot shaft securable to said axle housing,

a track frame having an intermediate point secured to the main pivot shaft for pivotal oscillation of the track frame with respect to said axle housing, and having first and second ends extending from said intermediate point,

idler support members at the first and second ends of the track frame,

means pivotally and reciprocably securing the idler support members to the track frame ends,

idlers rotatably mounted on the idler support members,

cushion means responsive to reciprocation of the idler support members with respect to the track frame ends to cushion recoil of the idlers,

a rotatable drive sprocket attachable to said axle housing and positioned between the ends of said track frame and above the idlers,

means driving the rotatable drive sprocket by the drive axle, and

a track chain emcompassing the idlers and drive sprocket and in driven engagement with the drive sprocket.

3,841,425

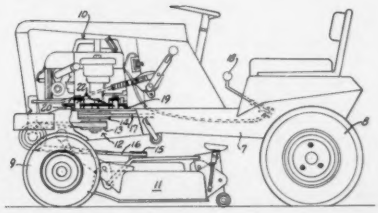
CONTROLLED VIBRATION ABSORBING MOUNTING FOR ENGINES

Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Oct. 26, 1973, Ser. No. 410,188

Int. Cl. E02d *27/44*

U.S. Cl. 180—53 R **7 Claims**



1. In combination with an implement such as a power lawn mower, garden tractor or the like having a frame with a generally horizontal portion, and a vertical shaft engine which

provides power for the implement, the engine having a base with spaced apart mounting spots on its bottom, and having its crankshaft projecting downwardly with power take-off means thereon, vibration absorbing means mounting the engine on said generally horizontal portion of the frame of the implement, comprising:

A. a soft mount connecting each of the spaced apart mounting spots of the engine base with said generally horizontal portion of the implement;

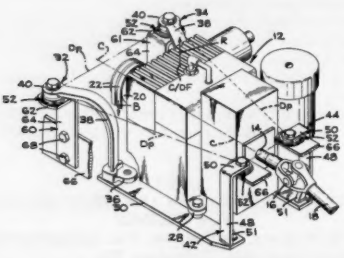
B. a plurality of resiliently flexible strips each rigidly connected at one end to the engine base and projecting therefrom in spaced substantially parallel relationship to said generally horizontal portion of the implement frame; and

C. means rigidly anchoring each of said resiliently flexible strips at a distance from its connection with the engine, to said implement frame,

said resiliently flexible strips being elongated and substantially flat and having greater width than thickness so that they have edgewise stiffness and flatwise flexibility, and said strips having their major surfaces facing upward and downward so that said strips restrain lateral displacement of the engine with respect to the implement frame but leave the engine free to move vertically to the extent the soft mounts provide for such movement,

whereby the location of the power take-off means with respect to the implement is not objectionably altered by the permitted movement of the engine.

3,841,426
ENGINE ISOLATION SYSTEM
Mark S. Nemschoff, Mequon, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 7, 1972, Ser. No. 313,059
Int. Cl. B60k *5/00*
U.S. Cl. 180—64 R **7 Claims**



1. An apparatus for supporting an engine assembly on a chassis and for isolating and damping vibration between the engine assembly and the chassis including:

an engine assembly having mass and subjectable to forces exterior of the engine assembly from the output of power from the engine assembly;

a chassis on which the engine assembly is mounted; and

a mounting means for supporting the engine assembly on the chassis and for isolating and damping vibration between the engine assembly and the chassis,

a pulley and belt means driven by the engine assembly and operatively connected to the chassis, the belt tension causing a static force to act on the engine assembly,

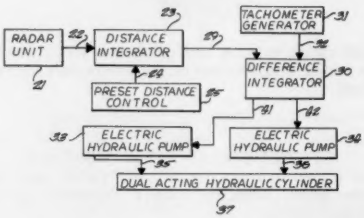
said mounting means further including a plurality of resilient elements disposed in a common generally horizontal plane near the center of mass, said plane being normal to a resultant force vector and passing through a center of dynamic forces, each of said resilient elements being spaced substantially equal distances away from said center of dynamic forces.

the resultant force vector being equal in magnitude and opposite in direction to a vector sum of the weight force of the engine assembly and the static forces acting on the engine assembly, the center of dynamic forces being that point through which the resultant force vector must act to balance both the weight force of the engine assembly and the static forces acting on the engine assembly.

ERRATUM

For Class 180—65 see:
Patent No. 3,841,238

3,841,427
VEHICLE COLLISION PREVENTION DEVICE
Vito Di Vita, 9609 N. 34th Ave., Phoenix, Ariz. 85021
Filed Nov. 19, 1973, Ser. No. 417,399
Int. Cl. B60t *7/12*
U.S. Cl. 180—98 **3 Claims**

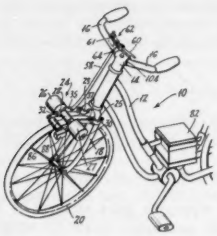


1. A vehicle collision prevention device intended to be mounted in a vehicle in a position having a clear line of vision forwardly of the vehicle to detect the presence of a vehicle in front of the protected vehicle and behind which the protected vehicle is to travel, the device comprising a hollow box-like housing including a front surface and a bottom surface, a radar transmitting and receiving antenna mounted in said housing immediately behind said front surface and adapted to transmit electromagnetic radar waves in a direction forwardly of the vehicle and to receive any such waves which strike the forward vehicle and are bounced rearwardly therefrom, a radar unit connected to said antenna and providing an electrical voltage output signal proportional to the distance between said forward vehicle and said protected vehicle, a distance control manually settable by the vehicle driver to a desired distance at which the vehicle driver wishes to follow the front vehicle, the preset distance control providing an output voltage signal indicative of the preset distance selected by the vehicle driver, a distance integrator circuit receiving said radar unit output signal and said preset distance control output signal in a manner to compare the same and provide a proportional comparative output voltage signal, a difference integrator circuit, said comparactive output signal from said distance integrator being fed into said difference integrator circuit, an electrical generator tachometer adapted to be connected to a speedometer cable of said protected vehicle for generating an electrical voltage indicative of the speed of the vehicle at all times, said tachometer generator signal being fed into said difference integrator circuit, means for applying the braking system of the protected vehicle, and said difference integrator providing output signals proportional to the difference between the tachometer generator signal and the distance integrator comparative output signal to operate said means in a manner to selectively apply and release the brake system of the vehicle whereby said vehicle may be slowed to automatically follow the forward vehicle at the selected preset distance.

3,841,428
AUXILIARY ELECTRIC DRIVE ATTACHMENT FOR A VEHICLE

Norman Bialek, 14 Broadview Rd., Westport, Conn. 06880

Filed Dec. 20, 1971, Ser. No. 209,519
Int. Cl. B62d 3/00
U.S. Cl. 180—74 13 Claims

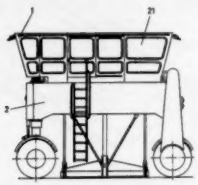


1. An electric power drive attachment for a wheeled vehicle, comprising in combination:
   a. a pair of separate and distinct electric motors disposed end to end, having shafts arranged in axial alignment with one another,
   b. resilient means disposed between the adjacent ends of the motors for interconnecting the motor shafts for simultaneous turning;
   c. said resilient means further comprising a friction drive roller being drivingly engageable with one wheel of the vehicle.

3,841,429
DEVICE FOR A STRADDLE-CARRIER OR A SIMILAR VEHICLE

Francesco Falcone, and Odd Peder Hr anes, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 4, 1971, Ser. No. 186,111
Claims priority, application Sweden, Oct. 13, 1970, 13818/70
Int. Cl. B60p 1/02
U.S. Cl. 180—77 S 3 Claims

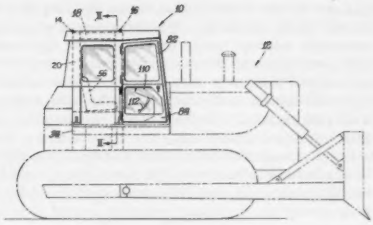


1. A straddle carrier comprising:
   a vehicle having an elongate peripheral outline in the moving direction of the vehicle;
   a driver's cab stationarily mounted on the top of said vehicle lengthwise thereof, said cab occupying substantially the length of the vehicle top and having observation windows in its sides;
   guide tracks within the cab extending lengthwise of the cab and the vehicle;
   a swivelling driver's seat supported on said guide tracks movable along the length thereof in either direction;
   a motor drive mounted on said driver's seat and coupled with the same for driving the seat along the guide tracks in either direction; and
   circuit control means for controlling the driving of the seat along the guide tracks and operation of the carrier.

3,841,430
ROLL STRUCTURE CAB AND SEAT ARRANGEMENT FOR TRACK-TYPE TRACTORS

John H. Babbitt, Jr.; Ronald G. Boyer, both of Peoria; Arthur E. Olt, Jr., Pekin; Paul E. Schuck, Canton, and Sheldon L. Stark, Eureka, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 2, 1972, Ser. No. 294,232
Int. Cl. B62d 33/06
U.S. Cl. 180—89 A 9 Claims

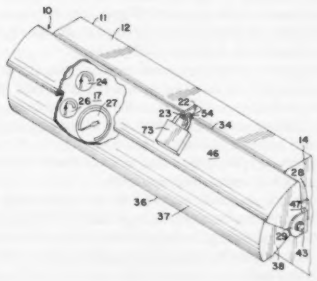


1. A vehicle roll protective structure having an integrated operator platform comprising:
   a plurality of vertically extending structural members defining a forward member and a rearward member for each side of said structure;
   a plurality of structural cross members tying said vertically extending members together at the top thereof;
   a seat support platform comprising an unitary cross frame including forward and rearward cross members extending between and secured respectively to said forward and rearward vertically extending structural members at the bottom thereof and further including means defining a seat platform with side portions extending upward and secured to said vertically extending members at a position spaced upward from said bottom; and,
   said roll protective structure being pivotally mounted to a tractor frame.

3,841,431
INSTRUMENT PANEL GUARD

James W. Russey, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 2, 1973, Ser. No. 356,327
Int. Cl. B60k 37/00
U.S. Cl. 180—90 7 Claims



1. An instrument panel guard for an instrument console having a plurality of instruments mounted on an instrument panel thereof comprising;

cover means having opposite ends and a pair of arms individually secured to said ends, said cover means including a predetermined upper curved plate and a lower curved plate with each of said plates having upper and lower edges;

pivot means operatively attaching said arms of said cover means externally to such instrument console for selective pivotal movement of said curved plates between a closed protective overlying position dependably enclosing such instruments and a retracted open position permitting unrestricted visual inspection of the instrument panel; and

abutment means including an inwardly disposed hook formed along the lower edge of said upper plate and an outwardly disposed hook formed along the upper edge of said lower plate to permit limited relative movement of said curved plates to a nested overlapping retracted position with said inwardly disposed hook being engageable with said outwardly disposed hook to move the curved plates as a unit toward said closed position,

said lower curved plate having an inwardly disposed flanged lip formed along the lower edge of said lower curved plate for abutment with the instrument console to limit the pivotal movement of said lower plate in said closed position.

3,841,432

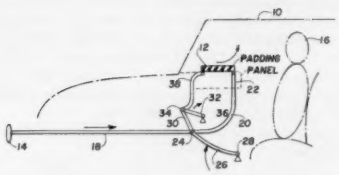
SAFETY DEVICE FOR VEHICLES

Thomas Jones, 7134 Normal Blvd., Chicago, Ill. 60621

Filed May 18, 1973, Ser. No. 361,769

Int. Cl. B60r *21/06*

U.S. Cl. 180—91 **4 Claims**



1. In a vehicle, in combination:

a heavily padded member which in a first normal position is disposed horizontally along the top of the instrument panel and extends transversely to the direction of elongation of the vehicle;

a first generally L-shaped element lying in a vertical plane; the element having a long horizontal arm extending from the front bumper along said direction to the panel with a vertical arm extending upward from the horizontal arm and pivotally secured at its upper end to the member, said vertical arm being heavily padded;

a first linkage pivotally secured at one end to a point on the horizontal arm intermediate bumper and vertical leg, said linkage extending inclinedly downward and being pivotally secured at its other end to the vehicle at a position below the horizontal arm;

a second linkage pivotally secured at a lower end to said pivot point and extending upward;

a third linkage pivotally secured at its upper end to the upper end of the second linkage and extending downward, the third linkage being pivotally secured at its lower end to the vehicle in a position normally above the horizontal arm; and

a fourth linkage pivotally secured at its upper end to the member in a position spaced from the vertical arm, the fourth linkage extending downward and being pivotally secured at its lower end to the upper ends of the second and third linkages.

3,841,433

GAS-CUSHION VEHICLES

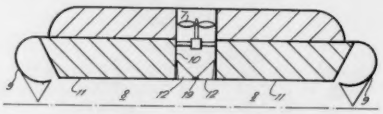
Raymond William Dyke, Southampton, England, assignor to Vosper Limited, Portsmouth, England

Continuation of Ser. No. 689, Jan. 5, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,774

Claims priority, application Great Britain, Jan. 8, 1969, 1172/69

Int. Cl. B60r *1/02*

U.S. Cl. 180—116 **3 Claims**



1. A vehicle supported by a cushion of pressurized gas comprising a hull, gas supply means for supplying gas under pressure to said cushion, a duct in said hull connecting said gas supply means with said cushion, and check valve means in said duct actuated by reverse gas flow from said cushion into said duct to a close position to at least partially seal said duct against said reverse gas flow upon failure of said gas supply means, said check valve means including at least one triangular valve segment of flexible material pivotally connected at all three corners to the hull, two of said corners being adjacent and substantially aligned to provide a common pivot axis therefor, said segment being movable between a normal valve open position during the time gas under pressure is supplied to said cushion and an inverted closed valve position in response to said reverse gas flow.

3,841,434

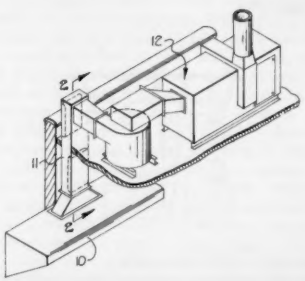
NOISE ATTENUATOR

Clifford Culpepper, Jr., Charlotte, N.C., assignor to Aero-Dyne, Charlotte, N.C.

Filed Jan. 31, 1973, Ser. No. 328,306

Int. Cl. F01n *3/06*

U.S. Cl. 181—36 R **1 Claim**



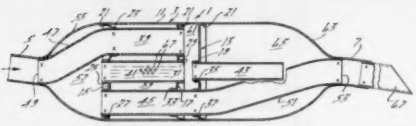
1. The combination, with a hood positioned adjacent a food preparation area within a building and an air pollution control system including an afterburner disposed outside the building and in which particulate grease is burned and noise is generated and a duct extending between the hood and the afterburner and through which airborne particulate grease is conveyed from the food preparation area, the duct including a vertically rising portion and a horizontally directed portion forming an ell with the vertically rising portion, of an arrangement for attenuating noise otherwise transmitted from the afterburner to the hood and comprising first and second noise attenuating devices each comprising a grease impervious film

bag, energy absorbing means sealed within said bag for dissipating by mechanically compressive absorption sonic energy impinging on said bag, said bag precluding accretion of grease on said energy absorbing means and thereby avoiding decay in the noise attenuation efficiency thereof, and means for mounting said bag within said duct in exposure to sonic energy being transmitted from the afterburner to the hood, said mounting means disposing said first noise attenuation device adjacent said ell for substantially direct, perpendicular impingement of sonic energy thereon and mounting said second noise attenuator device in predetermined spaced relation within the duct from said first noise attenuator device.

3,841,435
SWAGED TRI-FLOW MUFFLER

Theofore W. Hetherington, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Continuation-in-part of Ser. No. 329,395, Feb. 5, 1973, abandoned. This application Nov. 12, 1973, Ser. No. 415,284
Int. Cl. F01n 1/08
U.S. Cl. 181—54 **16 Claims**

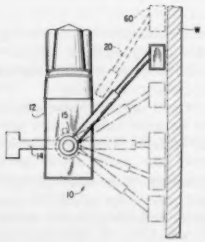


1. A muffler adapted for use in an internal combustion engine exhaust system comprising an elongated tubular monolithic shell having opposite ends reduced in diameter to form inlet and outlet bushings respectively, a plurality of transverse partitions located inside and supported on the wall of the shell, three parallel longitudinally extending open ended gas flow tubes supported in and structurally interconnecting the partitions so that the partitions and tubes form a subassembly, first and second of said tubes having offset portions extending respectively into said inlet and outlet bushings and being supported therein.

3,841,436
AERIAL PLATFORM WITH SIDE TO SIDE ROTATABLE BASKET

John L. Grove, McConnellsburg, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed Jan. 19, 1973, Ser. No. 324,913
Int. Cl. B66f 11/04
U.S. Cl. 182—2 **16 Claims**

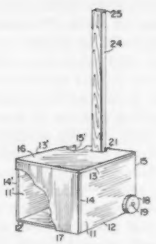


1. Aerial platform apparatus comprising:
a. a vehicle,
b. a linearly extensible and retractable boom having a length when extended substantially greater than the length thereof when retracted,
c. means mounting said boom on said vehicle for swinging movement in vertical and horizontal planes,
d. means for extending, retracting and swinging said boom,
e. load support means having a neutral position in which an axis thereof is in line with the boom axis, and
f. means at the free end of said boom for supporting said load support means for pivotal movement between two positions in each of which the rear portion of the load support means is substantially adjacent a side of the boom and in each of which said positions said load support means axis is substantially perpendicular to the boom axis,
g. whereby the portion of the load support means opposite said rear portion has access to an extensive area of a wall without movement of the vehicle by positioning said opposite portion near a wall with the rear portion adjacent a side of said boom and said boom extended, then swinging said boom and said load support means and retracting said boom, and after the boom reaches a plane perpendicular to said wall, continuing to swing said boom and said load support means until the rear portion of the load support means is substantially adjacent the opposite side of said boom.

3,841,437
PORTABLE STEP STOOL

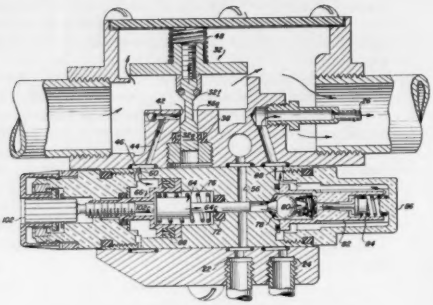
John W. Caughey, Elm Ave., Amherst, N.H. 03440

Filed June 28, 1973, Ser. No. 374,520
Int. Cl. E06c 1/397; E04g 1/28; A47c 9/12
U.S. Cl. 182—16 **2 Claims**



1. A stool, comprising, first and second generally rectangular upright side members disposed parallel to each other and each having a bottom edge, a top edge, a front edge and a rear edge, said bottom edges being adapted to be engaged and supported by a flat surface, a generally rectangular top member supported by said side members and fastened to the top edges thereof, and an elongated roller mounted between said side members for rotation about an axis parallel to said surface and located above said bottom edges and forward of said rear edges by first and second distances, respectively, both approximately equal to the radius of said roller, so that no portion of said roller projects substantially beyond said rear edges of said side members, said side members each being formed with the junction between said rear and bottom edges cut away sufficiently so that as said stool is tilted backward said roller engages said surface and said bottom edges become disengaged therefrom, whereby said stool may be rolled along said surface and whereby said stool may be stored in a space little wider than the width of the stool and with said rear edges of said side members substantially flush against a wall.

3,841,438
INJECTION LUBRICATOR
Sebastian David Tine, Lawrence, and Albert W. Dewberry, Boxford, both of Mass., assignors to Watts Regulator Company, Lawrence, Mass.
Filed Dec. 15, 1972, Ser. No. 315,496
Int. Cl. F01m *1/06*; F16n *7/14*
U.S. Cl. 184—7 D **12 Claims**



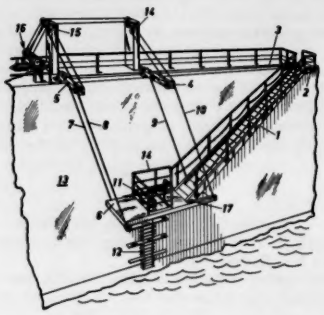
1. A lubricator adapted to be positioned in a conduit for dispensing metered amounts of lubricant to a pneumatically-operated tool in response to changes in the air flow rate through the conduit to the tool, which includes means defining a lubricant system and means operatively associated therewith defining a pneumatic sensing and actuating system for sensing changes in the air flow rate and actuating said lubricant system to deliver lubricant, wherein the improvement in said lubricator comprises providing in association with said lubircant system, transparent means which define a portion of a lubricant flow path through said lubricant system and indicator piston means positioned in said transparent means, which piston means is movable between a first seated closed position and a second unseated flow position in response to lubricant flow, said movement being visually detectable from without said lubricator through said transparent means, wherein said transparent means include an elongated, transparent, sleeve-like member having a shaped bore and an elongated, cup-shaped transparent cover member having at least one elongated groove therein, said cover member adapted to receive said sleeve-like member in telescoping relation so as to permit lubricant flow in said groove, with said piston-like means being disposed in said bore for movement from said first seated position to said second unseated position.

3,841,439
SHIP'S ACCOMODATION LADDER
Per Nilsson, Vastra Frolunda, and Bertil Bergstedt, Grabo, both of Sweden, assignors to AB Welin, Askina, Sweden
Filed Oct. 23, 1973, Ser. No. 408,435
Int. Cl. B63b *27/14*
U.S. Cl. 182—86 **6 Claims**

1. In a ship's accomodation ladder of the type including at least one ladder portion, means for pivotably mounting said ladder at an upper platform, level with the ship's deck, as well as a wire arrangement connected to at least one davit for carrying the lower end of said ladder portion, the improvement of

a lower platform,

pivot means having a horizontal axis for the attachment of said lower platform to the lower end of said ladder portion, means for attaching wires of the wire arrangement to the said lower platform to both sides of pivot axis, and

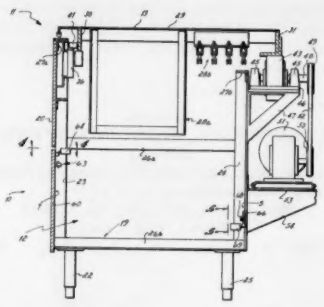


an opening in said lower platform, for providing access from below.

ERRATUM

For Class 184—7 see:
Patent No. 3,841,438

3,841,440
SAFETY DOOR MECHANISM
Elmer R. Weddendorf, Cincinnati, Ohio, assignor to B/W Metals Company, Inc., Fairfield, Ohio
Filed June 1, 1973, Ser. No. 365,980
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 R **3 Claims**



1. A safety door mechanism for a rotating cafeteria style counter, that counter incorporating a counter top of generally circular configuration adapted to rotate on top a fixed frame, said safety door mechanism including

a tunnel defined in said support frame structure, said tunnel being disposed beneath said counter top and providing ingress to and egress from the interior area of said counter,

an outer door mounted to the outer periphery of said support frame, said outer door selectively closing and opening said tunnel as desired to access from the exterior of said counter,

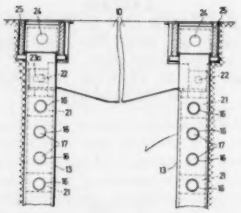
an inner door mounted to the inner periphery of said support frame, said inner door selectively closing and opening said tunnel as desired to access the interior of said counter, and

a first switch and a second switch electrically connected in series with said counter top's drive means, said first switch being spring loaded open and mounted to said support frame in juxtaposition with said outer door, and said second switch being spring loaded open and mounted to said support frame in juxtaposition with said inner door, whereby opening of one or both of said outer and inner doors causes said counter top to stop rotation and closing of both said outer and inner doors allows said counter top to continue rotation.

3,841,441
APPARATUS FOR RAISING AND LOWERING HEAVY LOADS

Karl Klinkhammer, Bielefeld, and Siegfried Bley, Enger-Westerenger, both of Germany, assignors to Gebr. Dickertmann Hebezeugfabrik A.G., Bielefeld, Germany

Filed Mar. 5, 1973, Ser. No. 337,871
Claims priority, application Austria, Mar. 6, 1972, 1863/72
Int. Cl. B66b *9/04*
U.S. Cl. 187—1 R **9 Claims**



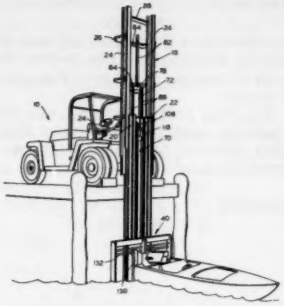
1. In an apparatus for raising and lowering heavy loads, elongated upright guide wall means formed with openings situated at different elevations along said guide wall means, fluid-pressure raising-and-lowering means guided for up-and-down movement by said guide wall means and having opposed upper and lower end regions, said fluid-pressure means including a cylinder and piston means for carrying out contracting and expanding movements respectively decreasing and increasing the distance between said end regions, a pair of fluid-pressure holding means respectively situated at said end regions and including parts of said end regions which are formed with hollow chambers respectively having horizontal axes and a pair of retractable piston means respectively movable in said chambers and having outer holding ends movable beyond said end regions into and out of said openings of said guide wall means, said pair of fluid-pressure holding means and said fluid-pressure raising-and-lowering means cooperating with each other for alternately displacing said piston means of said pair of fluid-pressure holding means into and out of openings of said guide wall means in timed relation with said contracting and expanding movements of said fluid-pressure raising-and-lowering means during stepwise movement of the latter along said guide wall means, and support means for carrying a load, said support means being operatively connected with the upper end region of said fluid-pressure raising-and-lowering means for movement with said upper end region.

3,841,442
LIFT TRUCK UPRIGHT

Dennis E. Erickson, Battle Creek, and Harry L. Harrington, Bellevue, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 226,636, Feb. 15, 1972, abandoned.
This application Sept. 17, 1973, Ser. No. 398,055
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **10 Claims**

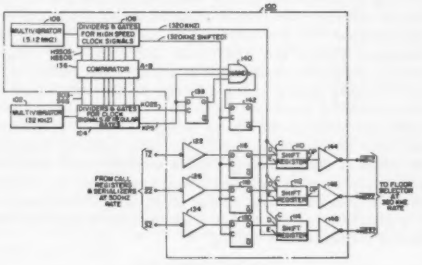
1. An upright structure for lift trucks comprising outer, intermediate and inner mast sections in telescoping relation to each other, a load carriage mounted on and movable along said inner mast section, a first lift cylinder assembly supported from the intermediate mast section and operatively connected to the inner mast section and the load carriage for elevating the load carriage on the inner mast section and the latter section on the intermediate mast section from a zero lift position to a positive lift position, and a second lift cylinder assembly supported from the truck and operatively connected to the intermediate mast section for lowering the intermediate mast section, the inner mast section and the load carriage and first lift cylinder assembly all as a unit with the intermediate mast section lowered by the second lift cylinder assembly from a zero lift position to a negative lift position.



3,841,443
ELEVATOR SYSTEM

Clyde A. Booker, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1973, Ser. No. 396,956
Int. Cl. B66b *1/18*
U.S. Cl. 187—29 R **14 Claims**



1. An elevator system comprising:
a structure having a plurality of landings,
an elevator car mounted in said structure to serve at least certain of the landings,
call registering means for registering landing related calls for elevator service,
first serializing means responsive to said call registering means, said first serializing means serializing said landing related calls to provide a first serial signal in which the calls for elevator service appear according to the landings to which they are related,
second serializing means responsive to said first serial signal, said second serializing means providing a second

serial signal which is a higher speed image of said first serial signal,

and means responsive to said second serial signal for controlling said elevator car to serve the calls for elevator service.

3,841,444

DISC BRAKE WITH ANTI-RATTLE SPRING HOLD DOWN MEANS

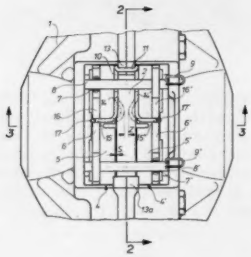
Heinz Baum, Dudweiler; Eckart Op Den Camp, Saarbrucken; Gert Schrader, Kutzberg, and John Redvers Botteril, Saarbrucken, all of Germany, assignors to Deutsche Bendix Ausrustungs GmbH

Filed May 14, 1973, Ser. No. 360,293

Claims priority, application Germany, May 12, 1972, 2223206; Oct. 25, 1972, 2252156; Jan. 25, 1973, 2303448; Mar. 17, 1973, 2313346

Int. Cl. F16d *55/22*

U.S. Cl. 188—72.3 **8 Claims**



1. In a brake: a rotor having a pair of friction faces, a pair of friction elements disposed adjacent said friction faces, a caliper straddling said rotor and each of said friction faces, said caliper including means for urging each of said friction elements into braking engagement with a corresponding friction face when a brake application is effected, said caliper defining an aperture to permit insertion and removal of said friction elements, said caliper including a pair of pins extending through said friction elements for supporting the latter for movement toward and away from said rotor, said caliper having a projection extending into said aperture, and a generally U-shaped spring having a bridge portion and a pair of arms extending therefrom generally parallel to said friction faces, said bridge portion being supported by said projection, said arms terminating in axially extending portions engaging the edges of corresponding friction elements, said arms extending under one of said pins from the projection so that said arms are stressed to exert a force urging the friction elements in a direction parallel to said friction faces to prevent said friction elements from rattling.

3,841,445

HOLD-DOWN ASSEMBLY FOR SLIDING CALIPER TYPE DISK BRAKE

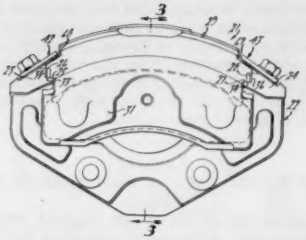
Kurt H. Rinker, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 11, 1972, Ser. No. 280,079

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.5 **4 Claims**

1. A hold-down assembly for holding the caliper of a sliding caliper type disk brake assembly comprising a generally rectangular shaped plate, said plate being formed with at least one notch extending inwardly from one of its peripheral edges and a rectangular opening formed adjacent said notch, and a spring, said spring having a first tab extending through said notch and interlocked with said plate, a second tab extending through said rectangular opening and interengaged with said plate, said tabs facing each other and being effective to retain



said spring relative to said plate, and a cantilevered portion extending away from said plate, said cantilevered portion terminating in an arcuate end adapted to engage the caliper.

3,841,446

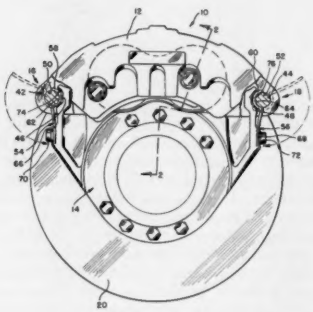
DISC BRAKE CALIPER AND ANTI-RATTLE SUPPORT

Charles R. Gravel, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 26, 1973, Ser. No. 373,706

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.5 **5 Claims**



1. In a disc brake:

a fixed support member;

a caliper;

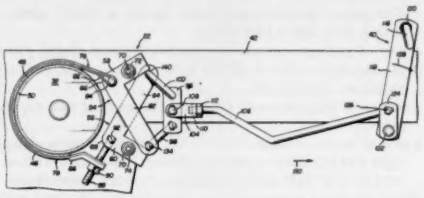
means slidably mounting said caliper on said support member for transverse movement with respect thereto;

said mounting means including a pair of outwardly facing recesses on opposite edges of said support member, a pair of pins carried on opposite edges of said caliper and extending transversely with respect to said recesses, each of said recesses embracing a substantial arcuate portion of the outer circumferential surface of its corresponding pin, one of said pins cooperating with a corresponding recess to define a gap between the outer circumferential surface of said pin and the wall of its corresponding recess, a clip having an arcuate portion located in said gap and an arm portion extending from said arcuate portion adjacent to the corresponding edge of said fixed support when the arcuate portion is located in said gap, said arcuate portion having inner and outer circumferential surfaces, the inner circumferential surface of said arcuate portion embracing at least the entire arcuate length of said arcuate portion of the outer circumferential surface of the corresponding pin embraced by said recess, and means fastening said arm portion to said fixed support.

3,841,447
SELF-ACTUATING BRAKE

William J. Schlapmann, Winneconne, and Dale Manteufel, Hortonville, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed May 16, 1973, Ser. No. 360,727
Int. Cl. F16d 49/00
U.S. Cl. 188—77 R 27 Claims

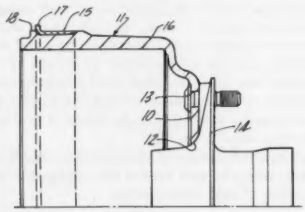


1. A self-actuating band brake for vehicles and the like, comprising: a flexible brake band having a center portion received around a rotatable brake drum and having opposed free ends, a pair of levers, said levers having spaced fixed pivot axes and each lever having a pivotal connection to a brake actuating means, said brake actuating means adapted to tension said pivot connections upon actuation of the brake, said opposed free band ends each pivotally connected to one of said levers, between said fixed pivot axis and said pivotal connection, and a stop means preventing rotation of said levers about said fixed pivot axis in the direction of rotation of the drum which would relieve the tension on said band ends and permitting rotation in the opposite direction, whereby the friction of braking in one direction tensions the pivotal connection of said band to one of said levers which is fixed by said stop means and the opposed lever rotates about its fixed pivot axis upon actuation of said brake to tension the opposed end of said brake band around said drum and brake the vehicle.

3,841,448
REINFORCED BRAKE DRUM

Roy C. Norton, Jr., Birmingham, Mich., assignor to The Budd Company, Philadelphia, Pa.

Filed June 14, 1973, Ser. No. 370,100
Int. Cl. F16d 65/10
U.S. Cl. 188—218 R 3 Claims

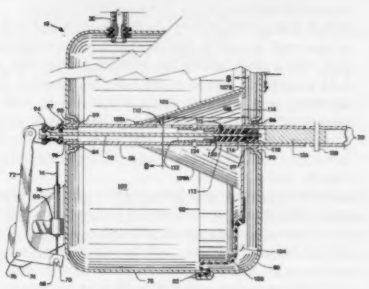


1. A cast brake drum comprising a radially extending web having a central aperture for accommodating a wheel hub and a plurality of stud holes formed therein radially spaced about said central aperture for positioning and securing said brake drum to the wheel hub, a shell drum having one edge integrally connected to said web and extend axially therefrom and the other edge thereof forming an open end of said brake drum, said shell drum having an inner surface adaptable as a brake surface and an outer surface, and a cast-in steel reinforcing band of high-tensile strength surrounding and embedded on said outer surface of said shell drum adjacent said open end, said reinforcing band being adjacent said open edge of said drum and having an inner edge and an outer edge, a radially outwardly extending flange integrally connected to the outer edge of said band, said band of sufficient thickness and length for resisting breaking loads if the cast metal should crack, said band having an outer surface extending between said edges and being flush with the outer surface of said shell drum, and said shell drum having a radial flange between the open edge of said drum and the radially extending flange of said band.

3,841,449
CLUTCH WITH VACUUM RELEASE MOTOR

James M. Coffey, El Segundo, and Clifford H. Lang, Los Angeles, both of Calif., assignors to Cybergenics Inc., Los Angeles, Calif.

Filed Aug. 29, 1972, Ser. No. 284,609
Int. Cl. F16d 25/08
U.S. Cl. 192—3.59 14 Claims



1. A supplemental and proportional clutch controller for an internal combustion engine powered vehicle having a manually operated gear shift mechanism, a pedal-operated spring-biased clutch, a clutch-operating pedal, and a carburator and intake manifold connected by a manifold throat, comprising: a gear shift lever operatively coupled to the manually operated gear shift mechanism, a knob secured to one end of said gear shift lever for control thereof, a push button slidably disposed and movable within a slot in said knob and having double V-shaped slot means at one end thereof within said knob, a bell-crank lever pivotally secured to and within said knob and having a first portion extending into said double V-shaped slot means and a cable receiving portion and a cable secured to said cable receiving portion and a cable sheath enclosing said cable and adjustably secured to said knob, whereby depression of said push button causes movement of said cable towards said knob;

a vacuum actuator comprising a pair of cylindrical cans, each having end walls and mating side walls sealed to one another to form a closed container, said end walls having axially aligned opening means, a piston tube slidably received in said opening means and having first and second ends extending outside of said closed container, said first end defining a first follower land seal and said second end having a connector sealed therein, a pair of bushings and seals disposed in said opening means and about said piston tube, a pair of axially spaced hole means in said tube, a second follower land seal secured to the interior of said piston tube intermediate said hole means, a piston secured to said piston tube within said closed container and comprising a plate having a port therein and extending toward said cylindrical can side walls, a diaphragm sealingly secured to said piston plate and to said cylindri-

cal can side walls to separate, with said piston plate, said closed container into first and second chambers, conduit means secured to said piston tube at one of said hole means and to said plate at said port to provide a communication between the interior of said piston tube and said second chamber, the other of said piston tube hole means communicating with said first chamber, a valve stem disposed within said piston tube and having first and second ends, said first valve stem end extending beyond said first follower land seal on said piston tube, a first leader bellows seal having a first portion affixed and sealed to said first valve stem end and a second portion extending towards and abuttable against said first follower land seal, a second leader seal secured to said valve stem second end abuttable against said second follower land seal of said piston tube in sealing engagement with said second follower land seal to seal said piston tube hole means and consequently said first and second chambers from one another upon movement of said first valve stem end away from said first follower land seal, a bell crank arm pivotally secured to said closed container and having first and second arms, said first ball crank arm secured to said cable and said second bell crank arm secured to said first valve stem end, and said cable sheath secured to said closed container;

a clutch linkage mechanism comprising a pull-rod secured at one end to said connector on said second piston tube end, and a plate having three connector means, a first of said connector means comprising a universal connector securing said pull-rod at its other end to said plate, a second of said connector means comprising means coupling said clutch pedal to said plate, and a third of said connector means securing said plate to said spring-biased clutch; and

means for coupling said first chamber to the carburator at the intake manifold comprising an inlet in said first chamber, a conduit secured to said inlet, a check valve positioned in said conduit, and connection means securing said conduit to the carburator at the intake manifold, said connection means comprising flanges respectively on the carburator and the intake manifold, said flanges having opening means for the manifold throat and two pairs of aligned bolt hole means, a gasket sealed between said flanges and having slot means aligned with one pair of said aligned bolt hole means and enlarge opening means extending over said manifold throat opening means and the other pair of said aligned bolt hole means, a cap sealed to said other pair of said aligned bolt hole means in communication with said manifold throat opening means, and a pair of threaded fasteners in said bolt hole means for securing said flanges and cap together, one of said threaded fasteners at the other pair of said aligned bolt hole means being relieved to enable communication between said cap and said gasket opening means and said conduit being secured to said cap.

3,841,450

SPRING APPLIED STEERING BRAKES CONTROLLED BY TRANSMISSION CLUTCH PRESSURE

Gary A. Drone, and Roy C. Ross, both of Springfield, Ill., assignors to Fiat-Allis Construction Machinery Inc., Milwaukee, Wis.

Filed Mar. 16, 1973, Ser. No. 342,153
Int. Cl. B60k *29/00*
U.S. Cl. 192—4 C **6 Claims**

1. In a crawler tractor having a power shift transmission with forward and reverse clutches, right and left final drive sprockets connected to the transmission output through right and left hydraulically controlled steering clutches, respectively, and right and left brakes operatively associated with said right and left sprockets, respectively, hydraulic control means comprising:

a first control system for said steering clutches and brakes including

right and left fluid operated brake actuators connected to said right and left brakes, respectively, and operable on pressurization to disengage said brakes,

a pair of springs operatively associated with said right and left brakes, respectively, urging the latter to their engaged condition,

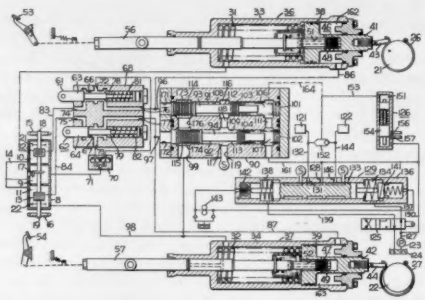
right and left clutch control valves, each having a control element shiftable between clutch engaged and clutch disengaged positions and each having a clutch port, a supply port and a brake port,

a pair of passages operatively connecting said clutch ports of said right and left clutch valves to said right and left clutches, respectively,

a source of fluid pressure connected to each of said supply ports,

a pair of brake passages connecting said brake ports of said right and left clutch control valves to said pressure chambers of said right and left brake actuators, respectively,

clutch pressure control means operatively associated with each of said clutch control valves operable when said



valves are in their clutch disengaging position to permit flow from said supply port to said brake port only when the fluid pressure in said supply port is above a predetermined minimum clutch disengaging pressure,

a bypass passage connected to each of said brake passages, and

a brake pressure regulating valve in each of said bypass passages and including

a shiftable flow control element having closed and open positions, and

fluid actuator means operable on pressurization to bias said flow control elements toward their closed position, a second control system for said power shift transmission for establishing forward, reverse and neutral conditions and having a circuit with fluid at a predetermined low pressure when said transmission is in said neutral condition and at a predetermined high pressure when said transmission is in either of said forward and reverse conditions, and

conduit means connecting said circuit to said fluid actuator means, whereby said brakes are engaged in said neutral condition of said transmission.

3,841,451

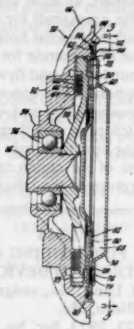
VISCOUS FLUID CLUTCH

Randall K. Saylor, Kettering, and Thomas J. Knab, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 7, 1973, Ser. No. 386,368
Int. Cl. F16d *35/00*
U.S. Cl. 192—58 B **4 Claims**

1. A viscous fluid clutch comprising first and second relatively rotatable drive means, said first drive means having an

annular working chamber and an annular reservoir chamber, fluid shear drive means formed on said first and second drive means located in said working chamber and operable with a fluid medium to provide a shear-type fluid drive between said first and second drive means, said working chamber having first and second outlet opening means at an outer portion thereof and first and second continuously open inlet opening



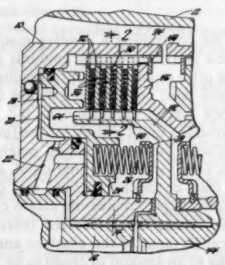
means at an inner portion thereof, pump means formed on one of said first and second drive means to pump said fluid medium from said working chamber through said first outlet opening means into said reservoir chamber, and an internally mounted bimetallic valve for controlling the flow of said fluid medium from said working chamber through said second outlet opening means into said reservoir chamber in response to changes in ambient temperature.

3,841,452

FRICTION PLATE ASSEMBLY

Roger L. Newsock, Centerville, and Warren W. Antrim, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 26, 1973, Ser. No. 382,676
Int. Cl. F16d *13/60*
U.S. Cl. 192—107 R **3 Claims**



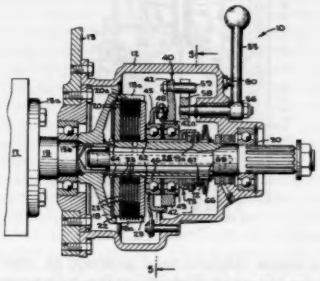
1. A friction plate assembly for torque transmitting connection with a splined support comprising annular disc means of friction material, carrier means disposed radially with respect to said disc means for operatively connecting friction disc means to said splined support, said carrier means comprising a one-piece wire having a plurality of evenly spaced waves therein, said wire having a plurality of evenly spaced arms formed by predetermined waves in said wire which extend radially in a first direction into the friction material of said disc means, means for securing said first arms to said friction disc means, said wire further having a plurality of evenly spaced arms formed by other predetermined waves in said wire which extend radially in a second direction and into meshing engagement with the splines of the support.

3,841,453

FRICTION COUPLINGS WITH SPRING CUSHIONED OPERATORS

George W. Culbertson, Oconomowoc, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Sept. 8, 1972, Ser. No. 287,403
Int. Cl. F16d *67/04*
U.S. Cl. 192—109 A **4 Claims**



1. In a clutch of the type having a drive member, a driven member, a shaft in driven relation with one of said members, two adjacent clutch elements surrounding the axis of said shaft respectively and connected in drive engagement with said members, one of said elements being mounted for movement in a direction axially of said shaft between an engaged position in gripping engagement with the other of said elements and a release position spaced from said other element, resilient means for urging said one clutch element away from said other element, an actuating mechanism movable along said shaft for applying a force to move said one element into engaged position with said other element against the resistance of said resilient means, spring means for applying a substantially uniform pressure against said actuati. 3 mechanism in a direction to cause said mechanism to apply said force to said one clutch element, the improvement which comprises transmission means operatively connected between said actuating means and said spring means for transmitting the pressure of said spring means to said actuating means, said transmission means being adjustable in a direction longitudinally of said shaft, adjustment in one direction being effective to lengthen said transmission means and adjustably move said actuating means and said one clutch element in a direction toward the engaged position of said clutch elements.

3,841,454

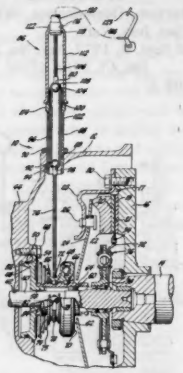
CLUTCH LASH AND WEAR ADJUSTMENT MECHANISM

Donald M. Pionte, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 22, 1973, Ser. No. 372,520
Int. Cl. F16d *11/02, 13/75*
U.S. Cl. 192—111 R **7 Claims**

1. For use with a clutch pedal and a cable-controlled clutch including a housing and a rotatable and axially movable spring-loaded throwout bearing mounted in said housing, a wear and lash adjustment mechanism comprising a threaded opening formed in said housing, an externally threaded adjusting nut having one end thereof threadedly mounted in said threaded opening, a locknut mounted on said adjusting nut for abutting against said housing, a collar adaptable for receiving

a turning tool formed on the outer periphery of said adjusting nut, an abutment surface formed on said adjusting nut, a cable-retainer member concentrically freely mounted within said adjusting nut, a flange formed on said cable-retainer member at an intermediate point therealong and abutting against said abutment surface, a first cable connected between one end of said cable-retainer member and a predetermined



point on the outer periphery of said throwout bearing, a second cable operatively connected between the other end of said cable-retainer member and said clutch pedal, and means associated with said cable-retainer member and said second cable for permitting said adjusting nut to be threadedly adjusted in said threaded opening without twisting said first and second cables.

3,841,455

CLUTCH WITH ENGINE OIL COOLING

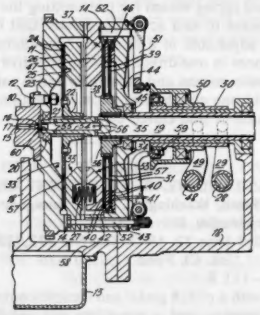
Thomas Eastwood, Huddersfield, England, assignor to David Brown Tractors Limited, Huddersfield, England

Continuation of Ser. No. 197,703, Nov. 11, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,571

Claims priority, application Great Britain, Nov. 24, 1970, 5529/70

Int. Cl. F16d *13/72*

U.S. Cl. 192—113 B **11 Claims**



1. An engine/clutch combination including an engine crankshaft, a flywheel secured to the crankshaft, a clutch housing secured to the flywheel for rotation therewith, a fixed clutch casing enveloping the combined flywheel and clutch housing, a driven shaft co-axial with the crankshaft, at least one clutch plate mounted on the driven shaft within the combined flywheel and clutch housing, an axially movable pressure plate within the combined flywheel and clutch housing between which pressure plate and the flywheel the clutch plate can be frictionally engaged, an engine lubricating oil conduit in the crankshaft, means supplying oil under pressure to the conduit from a sump, an orifice in that end of the crankshaft adjacent the driven shaft which communicates with the conduit and is co-axial with the crankshaft, an axial bore in that end of the driven shaft adjacent the crankshaft for receiving a jet of oil from the orifice, at least one radial hole in the driven shaft communicating with the bore therein for centrifugally directing oil to a chamber bounded by said flywheel and said clutch plate, at least one peripheral drain aperture in the combined flywheel and clutch housing to permit oil to pass from said chamber over said clutch plate and thence directly from the periphery of said housing directly to said casing, and an opening between the bottom of the clutch casing and the engine sump to permit oil to return to the latter.

3,841,456

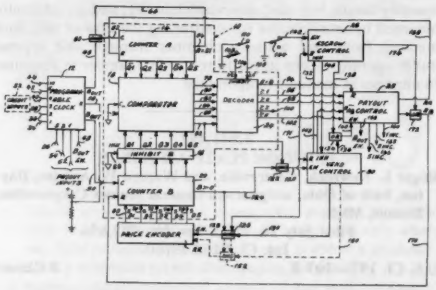
CONTROL CIRCUIT FOR VENDING AND OTHER COIN CONTROLLED DEVICES

Joseph L. Levasseur, St. Louis, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed July 23, 1973, Ser. No. 381,900

Int. Cl. G07f *5/22*

U.S. Cl. 194—1 N **27 Claims**



1. A circuit for controlling a vending machine capable of vending products and of refunding amounts deposited in excess of the vend price comprising a first counter circuit having input, output and reset connections, means including a programmable clock circuit connected to the counter in and operable to introduce input pulses for feeding thereto when credit is introduced into the vending machine, said clock circuit having a credit input, a refund input, an enable input, an output and reset connection means, said clock producing output pulses at its output connection means corresponding to each credit and refund input received thereat, means connected to the credit input of the clock to energize the clock circuit according to an amount of credit to be entered into the first counter, a second counter having an input, an ouput and a reset terminal, price encoder means operatively connected to the input to the second counter and including means for transferring an established vend price from the price encoder means to the second counter, means for comparing amounts accumulated in the first counter circuit with the vend price entered in the second counter including means to generate an electric response to indicate which of the first and second counter circuits has the greater accumulation therein, means for enabling a vend operation to take place whenever the amount accumulated in the first counter circuit at least equals the vend price entered in the second counter circuit, payout means operatively connected to the comparing means and

energizable thereby to refund amounts in the first counter circuit which exceed the vend price entered in the second counter circuit, said payout means including means to add to the vend price entered in the second counter circuit an amount equal to the amount of each refund until the first and second counter circuits have the same amount accumulated therein, and means associated with the means for comparing that are responsive to the occurrence of equal accumulations in the first and second counter circuits to reset the said first and second counter circuits and the payout means.

3,841,457

DEVICE FOR AUTOMATIC COLLECTION OF COINS IN COIN-OPERATED APPARATUS

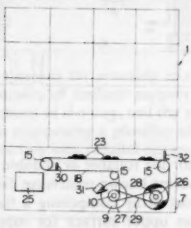
Sadao Kawasaki; Tadayoshi Kaneda, and Mitsuaki Tanaka, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki-Kaisha, Hyogo-Ken, Japan

Filed Sept. 1, 1972, Ser. No. 285,658

Claims priority, application Japan, Sept. 1, 1971, 46-79242[U]; Nov. 24, 1971, 46-110070[U]; Nov. 25, 1971, 46-110382[U]

Int. Cl. G07f *1/04*

U.S. Cl. 194—1 A **9 Claims**



1. A coin collecting apparatus for use in rental lockers, automatic vending machines, and the like which have a plurality of coin-operated units disposed in a plurality of rows and columns, said apparatus comprising in combination with said coin-operated units:

a hollow base structure for mounting said plurality of coin-operated units;

a plurality of members for fixing said coin-operated units onto said base structure;

a plurality of chutes extending vertically along the respective columns of said coin-operated units for directing the coins downwardly therethrough;

coin conveyor means extending horizontally within said hollow base structure for carrying the coins discharged thereon through said chutes toward one end thereof;

driving means for driving said conveyor means;

drive-control means for controlling the starting and stopping of said drive means, said drive-control means including a timer means for controlling the automatic operation of said driving means at predetermined time intervals; and

a coin receptacle disposed adjacent said one end of said conveyor means for collecting therein the coins carried by said conveyor means.

3,841,458

RENTAL LOCKER SYSTEM

Yoshio Kinoshita, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Hyogo-Ken, Japan

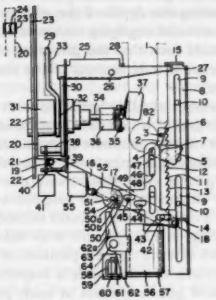
Filed Feb. 23, 1973, Ser. No. 335,160

Claims priority, application Japan, Feb. 24, 1972, 47-19110

Int. Cl. G07f *5/00*

U.S. Cl. 194—32 **13 Claims**

1. A rental locker system of the type rendered lockable with a key by dropping a required number of coins into a coin inlet and later unlockable with the same key comprising: a lock mechanism adapted to be locked or unlocked by said key; indication means indicating the number of coins required for locking or unlocking said lock mechanism; coin detection means for detecting the coins actually dropped; control means for controlling the lock mechanism in locking or unlocking; a slidable plate operating through said control means when the coin detection means detects coins of a number indicated in said indication means to place the locking mechanism in a



lockable state; an operating lever rotatable around a pivotal point in cooperation with said slidable plate; and a coin number setting plate engaging with said operating lever at a position selectively changeable, whereby when the coin number setting plate is operated by an unlocking action of the user, the operation is transmitted through said operating lever to said slidable plate, whereby the coin number required for a rental period can be changed by selectively changing the engaging position of said indicator operating lever and said coin number setting plate.

3,841,459

MOVABLE CARRIAGE ASSEMBLY AND INK RIBBON CONTROL

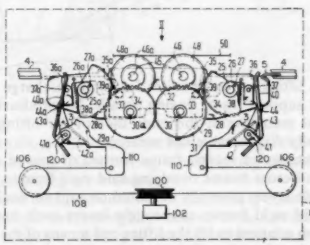
Hans Buschmann, Bensberg-Refrath; Erwin Mehlhart, Porz-Urbach; Emil Pomplun, Steinenbruck, and Alfred Schwibbe, Cologne, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Apr. 19, 1972, Ser. No. 245,504

Claims priority, application Germany, Mar. 24, 1972, 2119414

Int. Cl. B41j *33/44*

U.S. Cl. 197—161 **6 Claims**



1. An assembly for mounting an ink ribbon for use with mosaic printing devices and the like, said assembly comprising:

a bar member and a pair of ink ribbon spools rotatably mounted on said bar member in spaced positions;

an ink ribbon mounted on said spools such that rotation of one of said spools in one direction rolls said ribbon onto said one spool and rotation of the other spool in an opposite direction rotates said ribbon onto said other spool,

means reciprocably moving said bar member in a longitudinal direction,

gear means operable when coupled to said spools to rotate said spools in a direction winding said ribbon onto a driven spool,

means converting movement of said bar member to movement of said gear means,

means sensing the depth of the ribbon wound onto one of said spools and engaging said gear means to the other of said spools such that the direction of movement of said gear means is independent of the movement of said bar member,

a slide member slidably mounted with respect to said bar member and in which said gear means comprises:

a first pair of gear members mounted to said slide member in meshing engagement with each other; and

a second pair of gear embers with one of said second pair of gear members carried respectively by each of said spools, a different one of said second pair of gear members being in engagement with said first pair of gear members at each spaced position of said slide member whereby one of said spools is respectively driven by said first set of gear members at each position of said slide member.

3,841,460

PALLETIZED CARGO DISCHARGE APPARATUS FOR CONVEYORS

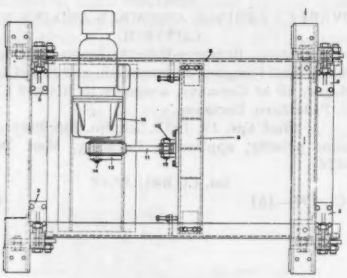
Walter Suter, Buchs, Switzerland, assignor to Oehler-, Wyhlen-Lagertechnic, AG, Aarau, Switzerland

Filed Aug. 2, 1972, Ser. No. 277,160

Claims priority, application Switzerland, July 27, 1972, 11575/71

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 R **1 Claim**



1. A lifting rail mechanism for cargo discharge comprising: a rigid support frame having parallel longitudinal beams and vertical members at the ends thereof for lifting supporting vertically displaceable rail means;

a rectangular second frame formed of spaced apart beams and cross beams overlying said rigid frame;

toggle levers pivotally mounted on said vertical member of said rigid frame, said toggle levers each having a short arm adapted to lift the lifting rail means of the mechanism and a long arm secured to the corner at each of the four corners of said second frame;

lifting rail means having rails spaced apart which are pivotally connected in their corners to the short arm of each of said toggle means;

driving means reciprocating said second frame member which includes a rotary motor and eccentric disc mounted thereon for converting the rotary output of said motor into linear reciprocating motion of said second frame members; and,

chain conveying means associated with said lifting member having a driven chain running along said rail means.

3,841,461

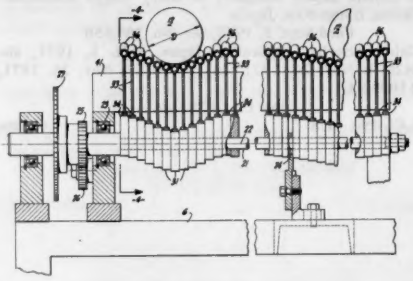
SINGULATOR

Jerald M. Henderson, Davis, and Bruce M. Shawver, Cupertino, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed July 20, 1972, Ser. No. 273,518

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **4 Claims**



1. A singulator for rollable or slidable articles of compact configuration having known transverse dimensions and assembled in a random array comprising a frame, means on said frame having an upper surface for supporting said articles adjacent a datum region, said surface sloping toward said region, a pair of conveyors of the same length on said frame and extending from said datum region side by side in approximately horizontal lines to a discharge end, separate means defining on each of said conveyors a number of separately movable top surface areas spaced apart along said lines, means for separately moving said areas of each conveyor up and down in timed relationship to each other within each conveyor to approximate waves traveling along said line and means for operating said conveyors with said waves of each conveyor out of phase with said waves of the other conveyor whereby articles on one conveyor are spaced longitudinally from articles on the other conveyor and said articles are discharged from said conveyors in single article sequence.

3,841,462

LENGTH MEASURER FOR ELONGATE MATERIALS

Hans V. Schmidt, 5218 Fairlawn Ave., Baltimore, Md. 21215

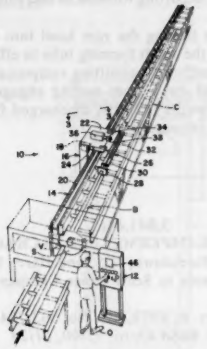
Filed June 22, 1973, Ser. No. 372,856

Int. Cl. B65g *69/00*

U.S. Cl. 198—39 **16 Claims**

1. In an elongate-material lengthmeasuring machine having a way, a carriage, a measuring reference on the carriage, means for mounting the carriage movably along the way, means for moving the carriage along the way, means for guiding movement of the carriage along the way, means for fixing the position of the carriage on the way, and means for indicating the position of the carriage along the way, the improvement comprising: the way having a horizontally extending flange and a pair of vertical parallel-opposed flanges with a horizontal web connecting the parallel-opposed flanges, the means for moving the carriage along the way including a pivot on the carriage above the horizontally extending flange, a bracket suspended from the pivot, driving means affixed to the bracket, the driving means having an output shaft with a resilient drivewheel, the drivewheel periphery in contact with

the underside of the horizontally extending flange, whereby rotation of the drivewheel in either direction tightens said contact with the underside of the horizontally extending flange, the means for guiding the carriage including a plurality of resilient guide rollers respectively contacting said parallel-



opposed flanges, the means for movably mounting the carriage including a plurality of resilient support rollers respectively contacting portions of the way, and the means for fixing the carriage position comprising a plurality of friction members opposedly contacting said parallel opposed flanges.

3,841,463

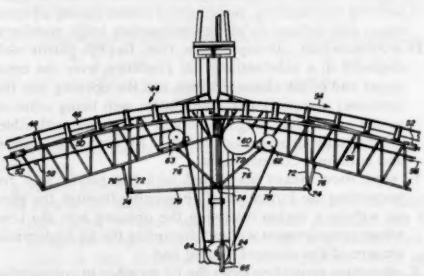
STACKER CONVEYOR WITH FLEXIBLE SECTION

Guthrie B. Stone, Honeoye; Arthur Orloff, Nunda, and Guy J. Wicksall, Fayette, all of N.Y., assignors to Stone Conveyor, Inc., Honeoye, N.Y.

Continuation of Ser. No. 176,902, Sept. 1, 1971, abandoned. This application Aug. 8, 1973, Ser. No. 387,215

Int. Cl. B65g *41/00*

U.S. Cl. 198—109 **9 Claims**



1. A conveyor assembly, said assembly comprising a stationary truss, a movable truss, mounting means pivotally supporting one end of said movable truss adjacent a first end of said stationary truss with said trusses disposed in closely adjacent end-to-end relation in generally the same plane and the other end of said movable truss swingable in said plane, an elongated, stiff but flexible and resilient support structure generally paralleling said plane and positioned with its opposite ends overlapping the adjacent ends of said trusses, first support means supporting the opposite ends of said resilient support structure from remote portions of said trusses spaced therealong from the adjacent ends of said trusses and with said opposite ends generally paralleling the corresponding truss portions and supported therefrom for limited lengthwise guided shifting longitudinally therealong, second support means connected to and supported at least in part from said trusses and supportingly engaged with predetermined portions of said resilient support structure disposed at a plurality of points spaced apart therealong between and from said opposite ends and operative, in response to relative angular displacement of said trusses, to support and automatically shift said spaced predetermined portions of said support structure to predetermined positions along a substantially constant radius path containing the opposite ends of said support structure during angular displacement of said movable truss relative to said stationary truss, and conveyor belt support means supported from and closely spaced along said resilient support structure and the remote end portions of said trusses on the remote sides of said first support means for supporting a flexible conveyor belt in a path substantially paralleling the remote end portions of said trusses and said resilient support structure in order that the path of that portion of the supported conveyor belt extending between said remote end portions of said trusses will comprise a substantially constant radius arc whose opposite ends merge smoothly into the portions of the conveyor belt supported from said remote end portions.

3,841,464

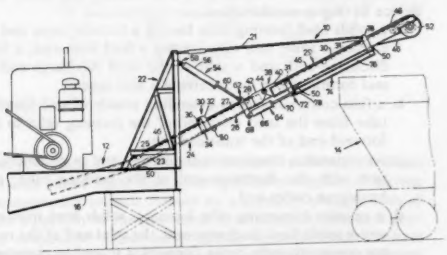
HYDRAULICALLY FOLDING MATERIAL DISCHARGE CONVEYOR

Larry D. Tome, Wauwatosa, Wis., assignor to Lippmann, Inc., Milwaukee, Wis.

Filed Oct. 30, 1972, Ser. No. 302,346

Int. Cl. B65g *21/12*

U.S. Cl. 198—115 **7 Claims**



1. A hydraulically foldable discharge conveyor for a bulk material processing plant having a supporting chassis, said conveyor comprising an A-frame,

said A-frame being mounted on a supporting chassis,

a first conveyor section rigidly secured to said A-frame,

said first conveyor section extending angularly rearwardly and upwardly from the chassis,

an intermediate conveyor section pivotally connected to the first conveyor section,

a third conveyor section pivotally connected to said second conveyor section, said second and third conveyor sections extending angularly rearwardly and upwardly from said first conveyor section,

a first pair of hydraulic assemblies connected between said A-frame and said second section for pivotally moving said second section upwardly to a substantially vertical position with respect to said first section,

a conveyor belt supported on said first, second and third conveyor sections,

a second pair of hydraulic assemblies connected between said second conveyor section and said third conveyor section for pivotally moving said third conveyor section downwardly to a substantially horizontal position with respect to said second conveyor section,

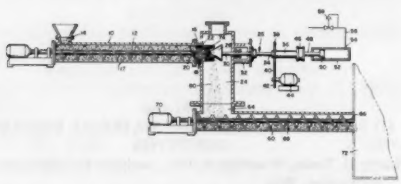
and a hydraulic circuit connected to said first and second hydraulic assemblies for selectively moving said second and third conveyor sections between operative and folded positions.

3,841,465

SOLIDS FEED TO A PRESSURIZED REACTOR

Clarence S. Miller, Jr., Kennett Square, and George A. Seely, Chadds Ford, both of Pa., assignors to AWT Systems, Inc., Wilmington, Del.

Filed Mar. 6, 1972, Ser. No. 231,873
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**



1. A device for delivering a solid feed into a reactor operating at elevated temperatures, wherein the pressure in the reactor is controlled outside of the reactor hot zone, said device having in combination:

a. a solids feed forming tube having a transfer zone and an extrusion zone, said tube having a feed inlet-end, a feed discharge-end, and a seat at the feed discharge-end of said forming tube for receiving a seal means,

b. a first conveyor means extending axially of said forming tube from the feed inlet-end of the forming tube to the forward-end of the transfer zone,

c. an expansion chamber connected to and in communication with the discharge-end of the forming tube, and having an outlet-end,

d. a reactor conveying tube having a solids feed inlet-end and a solids feed discharge-end, the inlet-end of the reactor conveying tube being connected to and in communication with the outlet-end of the expansion chamber, and the discharge-end of the reactor conveying tube being in communication with the reactor to be supplied with the solids feed,

e. a second conveyor means extending axially through said reactor conveying tube from the inlet-end to the discharge-end thereof,

f. drive means connected to said first and second conveyor means to impart, upon actuation thereof, rotation to said first and second conveyors,

g. a ram having a ram head disposed within the expansion chamber in axial alignment with the solids feed forming tube, said ram having a base-end providing a seal means for engaging the seat of the forming tube, a peripheral surface tapering forward from the base-end toward a forward-end and cutting means mounted on the peripheral surface of the ram head for breaking up feed of solids discharged from the forming tube, said cutting means being located to avoid interference with the seat of the forming tube,

h. drive means for imparting rotation to said ram head about its axis, and

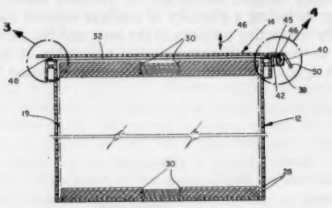
i. drive means for biasing the ram head into engagement with the seat of the solids forming tube to effect a sealing thereof and capable of permitting reciprocal movement of the ram head away from sealing engagement when opposed by pressures from the discharged feed above a pre-established pressure level.

3,841,466

MOISTURE-IMPERMEABLE PACKAGE

Louis S. Hoffman, Morristown, N.J., and Harry Spruyt, New York, N.Y., assignors to Scott Paper Company, Delaware Co., Pa.

Filed Nov. 6, 1972, Ser. No. 303,704
Int. Cl. B65d *43/16, 53/00, 81/24*
U.S. Cl. 206—205 **6 Claims**



1. A moisture-impermeable package comprising:

A. a container having a bottom wall, upstanding side walls cooperating with said bottom wall for defining a compartment to retain product, and an upper wall defining an opening in communication with said compartment;

B. a lid member movable between a closed position overlying said opening, and an open position exposing said opening;

C. channel means integral with said container and circumscribing said opening, said channel means having an open upper end defined by spaced upstanding ledge members;

D. a substantially air-impervious, thin, flexible plastic web disposed in a substantially flat condition over the open upper end of the channel means and the opening into the container compartment, said plastic web being adhered to the upstanding ledge members to provide a flexible, substantially air-impervious closure for both said channel and container compartment;

E. separation means associated with the plastic web for permitting the formation of an opening through the plastic web in a region overlying the opening into the container compartment without disrupting the air-impervious closure of the channel means; and

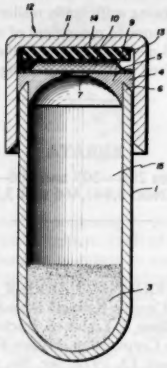
F. rib means projecting from the lid member in cooperative relationship with the plastic web and the lid member is in its closed position for engaging and flexing the plastic web intermediate the upstanding ledge members of said channel means to thereby provide a substantially moisture-impervious seal about the opening into the container compartment after the opening through the plastic web has been formed.

3,841,467

PRODUCT AND PROCESS FOR MAKING IMPROVED STRENGTH DENTAL AMALGAM

David A. Hansen, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed June 20, 1972, Ser. No. 264,619
Int. Cl. B65d *81/32, 81/20*
U.S. Cl. 206—219 7 Claims



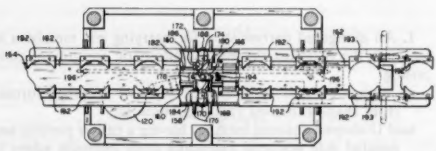
1. In combination:
a closed container,
a mass of a particulate alloy containing silver and tin in the container for use in making dental amalgam, and
an inert atmosphere in the container.

3,841,468

MOLDED PLASTIC CONTAINER SECONDARY OPERATIONS MACHINE

Noel B. Eggert, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 93,069, Nov. 25, 1970, Patent No. 3,716,910. This application Nov. 28, 1972, Ser. No. 310,010
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 5 Claims



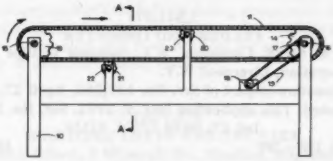
1. Apparatus for transferring articles from station to station comprising
a. article grasping members,
b. means for mounting said grasping members for lateral movement between open and closed positions and for reciprocal longitudinal movement, the longitudinal movement in one direction being accomplished while said grasping members are open and longitudinal movement in the other direction being accomplished while said grasping members are closed,
c. a rotary member interconnected with said mounting means for effecting both lateral and longitudinal movement of said article grasping members,
d. a contractible-extensible tie assembly means connecting said rotary member to said mounting means for translating the rotary motion of said rotary member to a longitudinal reciprocal stroke motion, the length of said reciprocal stroke being greater than the distance between stations,
e. said tie assembly means including a first connecting member, a second connecting member, and yielding biasing means linking said first and second connecting members and holding said two connecting members in a predetermined stationary position with respect to each other during the translation of motion from said rotary member to said mounting means between stations,
f. stop means positioned to contact said mounting means before the end of each reciprocal stroke and hold said mounting means at each station to define an index stroke while said tie assembly contracts and extends in response to said mounting means contact with said stop means, thereby creating a dwell period at each station,
g. an annular cam rotatable with said rotary member, said cam having first and second arcuate sections of smaller and larger constant radii, respectively, and first and second connecting sections interconnecting said arcuate sections,
h. a cam follower engaging said cam and mounted on the end of a bell crank to impart reciprocal movement thereto when engaging the connecting sections of the rotating cam and to cause the bell crank to dwell when engaging said constant radii sections, and
i. means interconnecting said bell crank to said grasping members to cause said grasping members to open when the cam engages the first of said connecting sections and to close when the cam engages the second of said connecting sections.

3,841,469

METHOD AND APPARATUS FOR CLEANING ROD CONVEYORS

Donald C. Scott, deceased, late of Nueces County, Tex., and by E. K. Jarrett, administrator, Corpus Christi, Tex., assignors to Clayton Specialties, Inc., Corpus Christie, Tex.

Filed Nov. 20, 1972, Ser. No. 308,266
Int. Cl. B65g *45/00*
U.S. Cl. 198—229 15 Claims



1. A method for cleaning the hereafter defined cylindrical portions of the flight rods of an endless rod conveyor having a transporting surface formed by a plurality of flight rods at least a portion of each of which is a straight, cylindrical portion suspended transversely of and between endless chain means which are parallel one to the other, the cylindrical portions of the flight rods being parallel and uniformly spaced one from another, said endless rod conveyor having driving means for causing movement of said flight rods in a direction transverse of the said cylindrical portions thereof, which cleaning method comprises successively and continuously engaging each of said cylindrical portions of said flight rods with the tooth spaces of at least one spur gear which is rotated and driven by said cylindrical portions in the manner of a rack and pinion, and which spur gear, while being so rotated, during each engagement with the cylindrical portion of a particular flight rod also simultaneously moves axially with respect to the said cylindrical portion of said particular flight rod a distance of 0.25 to 2.0 times the diameter of said cylindrical

portion, such that each of said tooth spaces while engaged with a particular one of said flight rods provides a wiping motion to a portion of the surface of the straight, cylindrical portion of such flight rod.

3,841,470

CLEANER FOR CONVEYOR BELT

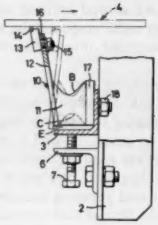
Kazuo Meguro, Osaka, Japan, assignor to Nihon Tsusho Kabushiki Kaisha, Hiroshima-ken, Japan

Filed Mar. 5, 1973, Ser. No. 338,186

Claims priority, application Japan, Apr. 20, 1972, 47-47313; June 22, 1972, 47-75185; Aug. 22, 1972, 47-99555; Dec. 30, 1972, 47-4518

Int. Cl. B65g *45/00*

U.S. Cl. 198—230 **9 Claims**



1. A cleaner for a conveyor belt comprising a beam mounted below a return run of a conveyor belt transversely to the direction of movement thereof, a plurality of scraper means mounted along said beam, each consisting of a resilient member consisting of a solid block of resilient material having two spaced plate attaching surfaces thereon, a scraper member plate having the surface at the lower end thereof fixed to one of the plate attaching surfaces on said resilient member and a scraping member on the upper end of said scraper member plate, and a mounting plate having the surface fixed to the other plate attaching surface of said resilient member, said mounting plate being attached to said beam.

3,841,471

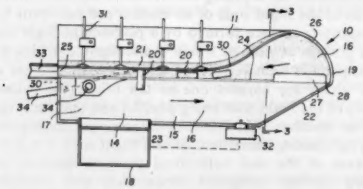
FEEDER AND ORIENTER

Dennis E. Mead, Cazenovia, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.

Continuation-in-part of Ser. No. 137,884, April 27, 1971, abandoned. This application Nov. 9, 1972, Ser. No. 305,088

Int. Cl. B65g *27/04, 47/24*

U.S. Cl. 198—289 **10 Claims**



1. A feeder and orienter comprising:

a. a first feed surface inclined upward from an input region for receiving objects to be fed;

b. a second feed surface leading from the output end of said first feed surface to a discharge region disposed so said objects falling from said second feed surface drop to said first feed surface;

c. each of said feed surfaces being covered with a pile material having flexible filaments uniformly inclined by about 5° to 25° from the vertical toward the direction of movement of said objects along said feed surfaces;

d. said filaments having uniform length and thickness and a sufficient density so that only the tips of said filaments support said objects to be fed;

e. means for vibrating each of said feed surfaces in a generally reciprocal motion in the general direction of the inclination of said filaments; and

f. said filaments being sufficiently resilient to flex under said objects during upward movement of said feed surfaces in said reciprocal motion to increase the feeding speed and force of said feed surfaces in moving said objects.

ERRATA

For Classes 206—205 and 206—219 see:
Patents Nos. 3,841,466 and 3,841,467

3,841,472

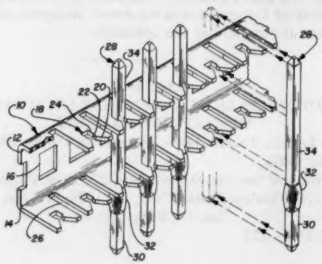
PIN-TERMINAL CARRIER STRIP

Ross Fuller, Bucks County; Kenneth Munshower, Montgomery County, and William E. Lightkep, Bucks County, all of Pa., assignors to Elco Corporation, Willow Grove, Pa.

Filed Sept. 13, 1972, Ser. No. 288,851

Int. Cl. B65d *73/02;* **B65g** *15/40*

U.S. Cl. 206—329 **4 Claims**



1. An elongated carrier strip for carrying pin members to facilitate the handling thereof by automatic equipment comprising:

an elongated unitary U-shaped channel member formed from shape-retaining yieldable material;

said U-shaped channel member having a center portion and parallel side portions extending from opposite edges of said center portion;

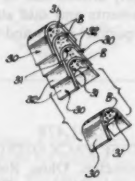
a plurality of aligned carrier means spaced longitudinally along said side portions for releasably, firmly, holding pin members at axially spaced points transverse to the longitudinal axis of said channel member, each of said carrier means comprising a slot extending inwardly from an outer edge of said side portion, said slot including a seating portion and a narrow neck portion, and;

aligned relief means formed in said side portions between each of said carrier means for isolating each aligned pair of said carrier means from adjacent carrier means to prevent said carrier means from losing hold of a pin member held therein due to bending of said channel member or removal of pins carried in adjacent carrier means, each of said relief means comprising a slot extending from an outer edge of said side portion substantially to said center portion.

3,841,473
FASTENER STACK AND FASTENERS HAVING BODIES OF FOAM

William L. Bagriel, Schaumburg, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 16, 1972, Ser. No. 297,814
Int. Cl. B65d *69/00*, *85/62*
U.S. Cl. 206—338 5 Claims



1. A fastener stack comprising a plurality of similarly shaped adjacent metal fasteners, each of which the plurality adapted to hold elongate members to each other, each fastener defining an open internal zone adapted to receive elongate members intermediate their ends and adapted to be closed to embrace and hold said elongate members, each fastener providing a body of given volume of compressible foam material fast therewithin and disposed within at least a portion of said open zone, said body being positioned to confront said elongate members, each of said fasteners being readily severable from said stack and proportioned to carry said body of foam material therewith, whereby when a severed fastener is closed about said elongate members, foam material is displaced and compressed within said closed fastener to reduce very substantially the volume of said foam material and to place foam material in intimate retentive engagement with said elongate members.

3,841,474
NAIL HOLDER ASSEMBLY

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

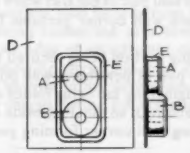
Filed July 10, 1972, Ser. No. 270,460
Claims priority, application Germany, July 12, 1971, 2134780
Int. Cl. B65d *85/24*; F16b *15/00*
U.S. Cl. 206—346 1 Claim

1. A nail holder assembly for feeding nails serially into an explosive charge driven setting device from which nails are driven into a target material, said nail holder assembly comprising a plurality of nails each having a shank portion and a head extending transversely of and outwardly from said shank portion, an elongated belt-like strip, said strip having a plurality of holes therethrough spaced apart in the longitudinal direction of said strip and each hole holding the shank portion of one of said nails, said strip having at least one slot-like opening spaced between each adjacent pair of said holes for said nails with the slot-like opening extending through said strip and transversely of its longitudinal direction and having a length less than the width of said strip, the area of said strip between adjacent slot-like openings being arranged to provide a multiple of the area of the nail head on said nails positioned within said strip so that, as each of said nails is driven by an explosive charge from the setting device, it causes the section of said strip surrounding said holes and extending between adjacent said slot-like openings therein to separate from the remainder of said strip and form a disk or washer on the shank of said nail which has an area considerably larger than the area of the nail head, wherein the improvement comprises that each said nail head is spaced from said strip by a part of the axial length of said nail shank portion, and a sleeve fitted about each said nail shank portion and said sleeve positioned on said nail shank portion between said strip and the head of said nail, each sleeve having an axial length less than the length of the part of the axial length of its associated nail shank portion which extends between the nail head and the strip, the outer surface of each sleeve having a frusto-conical configuration tapering outwardly toward the head of the nail, and each hole having a frusto-conical shaped configuration having a taper corresponding to the taper of the frusto-conical configuration of the sleeve.

3,841,475
PACKAGES OF BOBBINS

Shirley Russell Ellis, Leicester, England, assignor to The Jester Company Limited, Leicester, England

Filed Aug. 31, 1972, Ser. No. 285,181
Int. Cl. B65d *85/04*; B65h *55/00*
U.S. Cl. 206—391 1 Claim

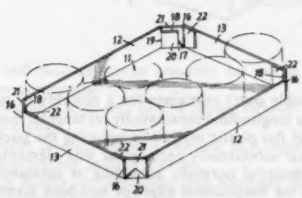


1. A package for bobbins of the type used with domestic sewing machines, comprising a backing means and a cover secured to said backing means to form a package, at least two under bobbins for domestic sewing machines disposed within said package, each of said bobbins being wound with the same type and shade of thread, each of said under bobbins being of a different type such that both bobbins are adapted to fit the majority of domestic sewing machines.

3,841,476
CARTONS, TRAYS AND THE LIKE

Peter Ellice Elford, 3 Wincraft Rd., Reading, England

Filed Nov. 15, 1971, Ser. No. 198,569
Int. Cl. B65d *79/00*, *5/28*
U.S. Cl. 206—427 2 Claims



1. A package formed from a plurality of articles and a tray blank of cardboard or like material, said tray blank comprising:

a. a substantially rectangular base portion having diagonal corners and defined by first and second pairs of parallel score lines and by a respective diagonal score line at each corner;

b. first and second pairs of peripheral wall portions defined by said first and second pairs of parallel score lines and by the periphery of the blank;

c. a uniting portion and a wall corner portion defined at each end of each of said first pair of peripheral wall portions by the end of the peripheral wall portion, the periphery of the blank, and a pair of parallel score lines, the uniting portion being nearer the end of the wall portion and said pair of parallel score lines being spaced apart by a distance substantially equal to the length of the diagonal score line;

d. a cut-out and a substantially rectangular strengthening tab at each corner of the blank, said tab at each said corner being defined by said diagonal score line at the corner, the cut-out at the corner and a pair of cuts between said pair of parallel score lines defining said uniting and wall corner portions at the associated corner, said pair of cuts being substantially at right angles to one another, and said cut-out at each corner being defined by said tab at the corner, the end of the peripheral wall portion of the second pair thereof at the corner and said uniting portion at the corner;

said articles being disposed in an ordered array on said base portion of said blank and said peripheral wall portions being folded about said first and second pairs of parallel score lines whereby they are erected around said articles; said uniting and wall corner portions at each corner being folded about said pair of parallel score lines defining them such that said wall corner portions form diagonal wall corners;

each said uniting portion being secured to an end of one of said second pair of peripheral wall portions; and

each said strengthening tab being folded about said diagonal score line defining it so that it is inside and adjacent to the corresponding wall corner forming portion.

3,841,477

OUTER CONTAINER FOR PACKING UNITS

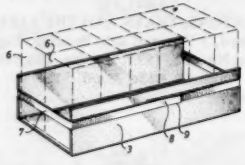
Sven Olof Soren Stark, Rydsgard, and Jan-Erik Olsen, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed June 27, 1972, Ser. No. 266,722

Claims priority, application Sweden, Aug. 6, 1971, 10067/71

Int. Cl. B65d *71/04*

U.S. Cl. 206—491 **5 Claims**



1. A reusable outer container for a plurality of packages comprising a longitudinal substantially rectangular base member of a rigid flat plastic material supporting the packages, a pair of lateral substantially rectangular side elements of the same rigid material normally extending at substantial right angles from the longitudinal edges of said base member, the length and width of said base member being substantially the same as the length and width of said plurality of packages when in close, tightly packed relation, a pair of longitudinal strip members of a plastic material more flexible than the rigid material of said base member and said pairs of side elements, each strip member extending between and integrally connecting one side element to said base member at their adjacent edges to facilitate repeated folding therealong, and at least one band-like member extending around the ends of and over the outer surfaces of said pair of lateral side elements to close the open ends of the outer container and to hold said pair of lateral side elements against said packages thus forming a close, tightly packed arrangement of the plurality of packages in the outer container, the ends of said at least one band-like member being releasably affixed one to the other, said base member, said side elements and said strip members having substantially uniform, parallel inner and outer surfaces.

3,841,478

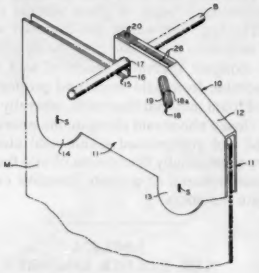
MERCHANDISE PACKAGING DEVICE

Charles A. Wells, Coshocton, Ohio; Robert A. O'Neil, and Michael C. Wilson, both of Wheaton, Ill., assignors to Pretty Products, Inc., Coshocton, Ohio

Filed Dec. 21, 1972, Ser. No. 317,185

Int. Cl. B65d *33/14, 75/00, 85/00*

U.S. Cl. 206—491 **12 Claims**



1. A merchandise packaging device comprising a sheet of material folded to form two superimposed portions for receiving a flat configured article therebetween, said superimposed side portions interconnected along a fold line defining a rigid spine and having a notch formed in each of said side portions in coextensive relationship when said side portions are folded together, said notch having an enlarged area disposed a distance inwardly from a peripheral edge at which the notch opens and configured to define a hanger hook adapted to engage with a hanger rod and to permit passage of the hanger rod therethrough, said side portions each including a reinforcing tab interconnected with the respective side portion along a fold line extending along the peripheral edge at which said notch opens.

3,841,479

CONTAINER AND CONTAINER BLANK

Richard R. Szatkowski, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

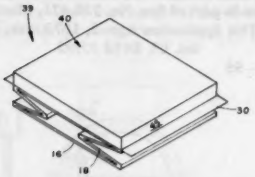
Filed May 15, 1972, Ser. No. 253,147

Int. Cl. B65d *89/16, 81/02*

U.S. Cl. 206—524 **11 Claims**

1. A new article of manufacture comprising a container blank including a bottom portion and side portions integrally connected to one another and to said bottom portion to define

a container shape, said side portions each being defined by dual walls of a thin flexible polymer material separated from



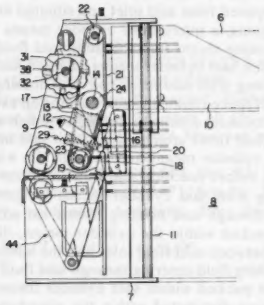
one another and defining a space therebetween, and said side portions including means for folding said side portions against said bottom portion for storage and shipment.

3,841,480

CARD SELECTION FOR A CARD RETRIEVAL SYSTEM

Nobuyuki Yanagawa, Kanagawa-ken, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,170
Claims priority, application Japan, June 21, 1972, 47-61402
Int. Cl. B07c *5/34*
U.S. Cl. 209—80.5 **2 Claims**



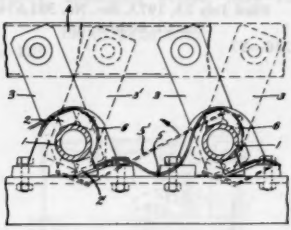
1. A card selection device for selecting a desired card from a randomly stacked set of cards each coded with a set of coding bits at coding bit positions disposed along a side edge of the card, each coding bit represented by either a notch or the lack of a notch at its bit position, each set of coding bits comprising *n* bits of which a subset comprising *r* bits are represented by notches, comprising a set of selector bars equal in number to the coding bits forming said set of coding bits and adapted to cooperate with the notches in the cards to select a desired card, a selector bar setting cam for moving selected bars between operative and inoperative positions to set selected bars at selected positions depending on the code number of the card to be selected, said selector bar setting cam having its peripheral surface divided into *n* cam elements arranged axially along the setting cam, said *n* cam elements having their peripheral surfaces divided into N cam zones arranged peripherally of the setting cam so that each cam zone is divided into *n* coding positions, *r* coding positions out of the *n* coding positions of each cam zone being formed as either elevated or depressed areas and the rest of the coding positions of each cam zone being formed as either depressed or elevated areas respectively, whereby N cards can be selected uniquely by selecting a desired angular position of said selector bar setting cam.

3,841,481

SIEVING, SCREENING, FILTERING OR WASHING MACHINE

Albert Wehner, Willaringen, Germany, assignor to Hein, Lehmann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 18, 1973, Ser. No. 352,178
Claims priority, application Germany, Apr. 24, 1972, 2220070
Int. Cl. B07b *1/28*
U.S. Cl. 209—310 **11 Claims**



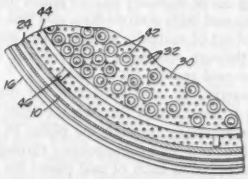
1. In a sieving, screening, filtering or washing machine, a device comprising a length of yieldable sieve bottom, a plurality of parallel spaced pivoted carriers forming at least one section, at least one movable rod, means pivotally connecting said rod with said carriers, to provide a uniform swinging movement of said carriers, said sieve bottom extending along said carriers and being connected to a lower edge of one carrier and the upper edge of an adjacent carrier, then to a lower edge of the following carrier and so on along all carriers, whereby said sieve bottom forms sieving zones between said carriers of variable shapes during the actuation of said carriers.

3,841,482

SELF-CLEANING SCREEN ASSEMBLY

John B. Barrows, Troy, Mich., and Leslie T. Hansen, Lakewood, Calif., assignors to Sweco, Inc., Los Angeles, Calif.

Filed Nov. 6, 1972, Ser. No. 304,084
Int. Cl. B07b *1/28*
U.S. Cl. 209—323 **15 Claims**



1. A self-cleaning screen assembly for use in a vibratory separator comprising

a separator screen, said screen having influent and peripheral areas,

a support member located beneath said separator screen and extending parallel thereto,

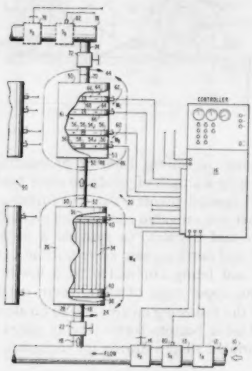
tension means for tensioning said separator screen about the peripheral area thereof,

a plurality of sliders positioned between said separator screen and said support member, said sliders being free to move on said support members, and

retainer means positioned between said screen and said support member for constraining said sliders from engag-

ing at least one of said areas of said separator screen, said retainer means being slidably positioned on said support member.

3,841,483
WATER PURIFICATION SYSTEM
Clifton E. Overton, Northridge, Calif., assignor to Overton Engineering, Billings, Mont.
Filed July 23, 1973, Ser. No. 381,674
Int. Cl. B01d *35/06*
U.S. Cl. 210—87 **15 Claims**



1. A flow-through water purification apparatus for separating colloidal particles suspended therein comprising:

a body having an inlet at one end and an outlet at an opposite end, said body defining at least one passage therethrough between the inlet and the outlet so that a flow of water entering the inlet will pass through said body exiting therefrom at the outlet;

a first set of mutually spaced plates disposed in the passage through said body adjacent said inlet;

a second set of mutually spaced plates disposed in the passage to said body intermediate said first set and the outlet;

a third set of mutually spaced plates disposed in the passage through said body adjacent said outlet and downstream said second set of plates;

means carried by said apparatus for directing a flow of water to be purified through the inlet, into the passage and sequentially through the plates in said first, second and third sets, and subsequently through the outlet;

means coupled to each of said plates for applying a preselected electrical potential thereacross so that when said flow is directed through said plates the colloidal particles therein will be subjected to a predetermined ionizing potential;

first valve means at the inlet for controlling the flow admitted thereto;

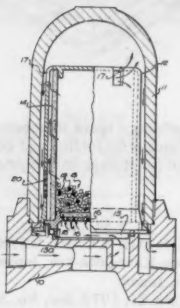
second valve means at the outlet for controlling the flow exiting therethrough;

first sensor means at the inlet for producing a signal proportional to the conductivity of the flow passing therethrough;

second sensor means at the outlet for producing a signal proportional to the resistivity of the flow therethrough;

means coupled to both of said valve and sensor means for selectively opening and closing said valve means responsive to predetermined signals from said sensors.

3,841,484
FLUID FILTER WITH COLOR INDICATOR
Keith Raphael Domnick, East Boldon, England, assignor to Domnick Hunter (Engineers) Limited, Birtley, England
Continuation-in-part of Ser. No. 120,471, March 3, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 346,773
Int. Cl. B01d *35/02*
U.S. Cl. 210—95 **15 Claims**



1. In a filter device for fluids, a filter cartridge comprising a housing means having opposed end regions and being formed with a fluid inlet at one of said end regions and a fluid outlet spaced from said inlet and situated at the other of said end regions, a micro-fibre cylinder means supported within said housing means for separating said fluid outlet from said fluid inlet, said cylinder means having a hollow interior communicating with said inlet, and said housing means having a side wall spaced from and surrounding an exterior side surface of said cylinder means to define therewith a passage through which fluid flows after passing from said inlet to the interior of said cylinder means and through the wall thereof to said passage before reaching said fluid outlet, said housing means coacting with said cylinder means for rendering the latter visible through said housing means, an adsorbent filter medium packed within the cylinder means, diffuser means disposed between said fluid inlet and the adsorbent medium for distributing fluid entering through said fluid inlet to said filter medium packed within said cylinder means, and oil-soluble dye means distributed within the adsorbent medium for responding to the presence of oil in fluid which enters through said inlet to release a dye having a color contrasting with that of said cylinder means and carried with the fluid through said cylinder means before reaching said passage, said cylinder means coacting with the dye released by said dye means when oil is present in the fluid to be discolored by said dye so that when the discolored cylinder is seen through said housing means it is known that oil is present in the fluid.

3,841,485
AUTOMATICALLY BACKWASHED GRAVITY FILTER
William J. Malkin, Fort Lee, N.J., assignor to The Permutit Company, Inc., Rochester, N.Y.
Filed May 8, 1972, Ser. No. 251,012
Int. Cl. B01d *23/24*
U.S. Cl. 210—104 **7 Claims**

1. In an automatically backwashed gravity filter including:

a filter compartment containing a bed of filter media,

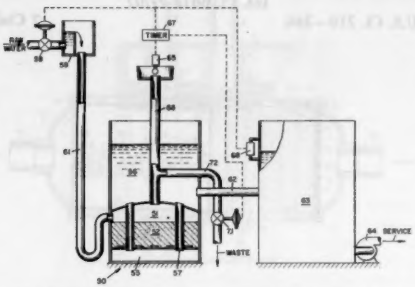
a fluid inlet conduit vented to the atmosphere and connected to the filter compartment,

an underdrain beneath the bed of filter media,

a backwash storage compartment located at a higher elevation than the bed of filter media and connected to the underdrain by an open conduit, whereby filtered fluid accumulates in the backwash storage compartment, and

means for initiating a backwash cycle when the inlet pressure in the filter compartment reaches a certain level; the improvement comprising:

sensing means positioned on said backwash storage compartment for detecting changes in the fluid level in said backwash storage compartment, and



means responsive to said sensing means for increasing the rate at which unfiltered fluid is supplied to said fluid inlet conduit as the fluid level in said backwash storage compartment drops and decreasing the rate at which unfiltered fluid is supplied to said fluid inlet conduit as the fluid level in the backwash storage compartment rises.

3,841,486

DEVICE FOR PURIFYING THE FEED WATER OF A STEAM POWER INSTALLATION

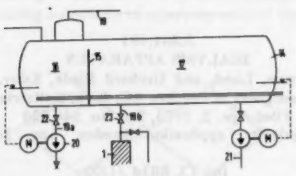
Hans-Gunter Heitmann, Erlangen-Buckenhof; Gerhard Donath, and Werner Beyer, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munchen and Berlin, Germany

Continuation-in-part of Ser. No. 887,574, Dec. 23, 1969, abandoned. This application Dec. 28, 1971, Ser. No. 213,207

Claims priority, application Germany, Dec. 24, 1968, 1816859

Int. Cl. B01d *23/24, 35/06*

U.S. Cl. 210—108 **1 Claim**



1. Device for cleansing the feed water of boilers from iron oxides, which comprises an electromagnetic filter comprising a cylindrical filter container, containing a filter bed of magnetizable particles and a coil for producing a magnetic field surrounding the filter bed, the magnetizable particles consisting of steel balls and the field intensity produced by the coil is considerably above the saturation field intensity of the steel balls, decaying alternating current means for regeneration and rinsing of the filter by effecting demagnetization of the steel balls, means for introducing rinse water from below upward at such speed through the filter container that the steel balls are whirled up, said filter container being connected in parallel with a feed-water container, an inlet to the filter container from a first chamber of the feed-water container and an outlet of the filter container feeding into a second chamber, said chambers of the container being separated by a wall which separates the container only in the lower portion thereof, and a pump connected in series with said electromagnetic filter, said pump being operated in dependence on the liquid level, in one part of said container.

3,841,487

FILTER DEVICE

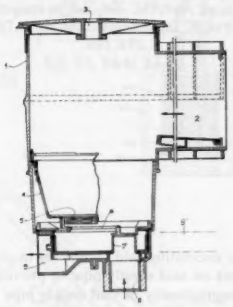
Guy Villette, 20, Rue des Marronniers 38, Grenoble, France

Filed May 15, 1972, Ser. No. 253,142

Claims priority, application France, May 14, 1971, 71.18525

Int. Cl. B01d *23/02*

U.S. Cl. 210—123 **1 Claim**



1. In combination, a swimming pool and a swimming pool skimmer comprising, a body having a side opening for freely allowing surface water of said pool to flow into said body, a first strainer basket below the level of said opening disposed for receiving the surface water flowing into said body through said side opening and straining it, a second strainer basket below the level of said first strainer for receiving strained surface water from the first strainer, a float check valve disposed for stopping flow of water from the first strainer basket to the second strainer basket when the level of the water within the body reaches a selected level corresponding to a level in the vicinity of a level at which said float check valve is disposed, means defining an inlet in the bottom of the pool for flow into the second strainer of a supply of water other than said strained surface water for straining thereof, means for discharging from said second strainer through a common discharge outlet all the strained surface and strained other water for return to the swimming pool, and said float check vale being disposed below the first strainer and above the second strainer, said second strainer having an inlet on an upper end thereof over which said float check valve seats, and said float check valve seating entirely covering the last mentioned inlet when said level of the water obtains thereby isolating the first strainer from the second strainer and said inlet and discharge outlet while continuing to strain said other water in said second strainer.

3,841,488

AGITATING STRAINER FOR MACHINE TOOL COOLANT SYSTEMS

Harry A. Yessaian, 11769 W. Parkway, Detroit, Mich. 48239

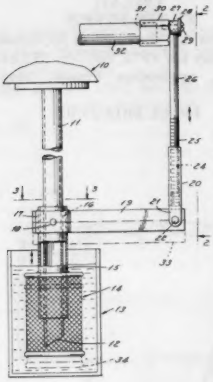
Filed Aug. 17, 1973, Ser. No. 389,321

Int. Cl. B01d *33/00*

U.S. Cl. 210—168 **5 Claims**

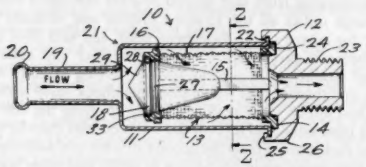
1. In a machine tool having a rotating shaft and a cutting tool coolant system having a coolant reservoir and a fixed coolant supply pipe extended into the reservoir, the combination comprising:

a. a coolant strainer operatively disposed in said reservoir;
b. means movably supporting said coolant strainer on said fixed supply pipe for movement longitudinally of said supply pipe, with said supply pipe extended into said strainer; and,



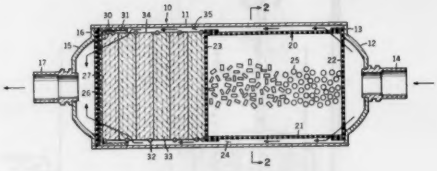
c. means for oscillating said means for movably supporting the strainer on said supply pipe to provide an oscillating motion longitudinally of said supply pipe to said strainer to prevent a build-up of dirt and the like on the outer surface of said strainer.

3,841,489
FLUID FILTER
John F. Combest, and Ralph L. Kuss, both of Findlay, Ohio, assignors to R. L. Kuss and Co., Inc., Findlay, Ohio
Filed May 2, 1973, Ser. No. 356,301
Int. Cl. B01d *35/06*
U.S. Cl. 210—223 **31 Claims**



1. A fluid filter comprising a case, said case defining an upstream inlet fitting and a downstream outlet fitting, first filtering means within said case for capturing foreign magnetic particles within a flowing fluid in the line, second filtering means for capturing other foreign particles within the fluid, means integral with said first filtering means for deflecting the fluid from an axial path through said inlet radially outwardly toward said second filtering means, and structural means for retaining said first and second filtering means together within said case.

3,841,490
REFRIGERANT FILTER-DRIER
John E. Hoffman, Webster Groves, and Ardell J. Schelich, Washington, both of Mo., assignors to Sparlan Valve Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 231,198, March 2, 1972, Pat. No. 3,815,752. This application Aug. 8, 1973, Ser. No. 386,650
Int. Cl. B01d *27/02*
U.S. Cl. 210—266 **7 Claims**

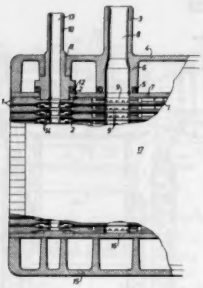


1. A filter-drier for refrigerator systems, comprising:
a. a housing having an inlet at one end and an outlet at the other end,
b. a foraminous canister located in the housing, the canister having one end engaging the housing adjacent the housing inlet to assure flow through the end of the canister,
c. a loose granular adsorbent material bed engaging and contained in the canister,
d. an elongate, hollow wire form disposed in the housing downstream of the canister and adsorbent material bed, the wire form having one end arranged toward the outlet and its other end disposed toward the canister,
e. a filter media of inorganic fibrous material disposed in the wire form and assuming substantially the shape of the wire form, the wire form and filter media having one end engaging the housing adjacent the housing outlet to insure flow through the filter media, and
f. the canister being peripherally spaced from the housing downstream of the canister end engaging the housing to provide a longitudinal flow channel therebetween to increase flow capacity by having flow through the canister end and then through only a portion of the longitudinal dimension of the adsorbent material bed in the canister and then into the flow channel and then through the filter media.

3,841,491
DIALYSIS APPARATUS
Olov Hagstrom, Lund, and Gerhard Riede, Eslov, both of Sweden, assignors to Gambro AG, Bern, Switzerland
Filed Apr. 2, 1973, Ser. No. 346,820
Claims priority, application Sweden, Apr. 26, 1972, 5475/72
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**

1. A dialysis apparatus comprising a plurality of stacked supporting plates and a plurality of pairs of membranes, each pair of membranes being disposed between a pair of plates and in stacked relation therewith, said plates being provided with grooves facing said pairs of membrances to permit passage of a liquid to be purified between the membranes of each pair and to permit passage of a purifying liquid between the outside of each pair of membranes and the surface of the adjacent plate, said stack of plates and membranes being provided with holes therethrough forming a distributing passage extending transversely of the stack of plates and membranes for introducing a purifying liquid, annular button-like distributing members disposed in a recess provided in one side of each plate, the center opening of each annular distributing member coinciding with the transverse distributing passage, each mem-

ber being provided with a continuously annular surface on one side facing away from the recess and forming a seal with the adjacent membrane, the other side of each member being provided with radial grooves extending from the inner central opening to the outer periphery thereof to provide passages for the purifying liquid and spacing elements therebetween, said



grooves and spacing elements facing the bottom of the recess provided in the one side of said plate whereby purifying liquid may be passed into said transverse distributing passage then outwardly and radially through said radial passages to pass between the outer surface of one of said pairs of membranes and the adjacent plate.

3,841,492

PRODUCTION OF SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES

Willard C. Brinegar, Morris Township, N.J., assignor to Celanese Corporation, New York, N.Y.

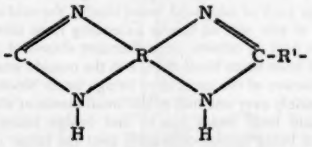
Continuation-in-part of Ser. No. 219,157, Jan. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 28,940, April 15, 1970, Pat. No. 3,720,607. This application June 29, 1973, Ser. No. 375,262The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.

Int. Cl. B01d *39/16, 31/00*

U.S. Cl. 210—500 **21 Claims**

1. A process for producing an improved reverse osmosis membrane of unusually high physical durability and chemical stability comprising:

a. providing a solution of a polybenzimidazole polymer consisting essentially of recurring units of the formula:



wherein R is a tetravalent aromatic nucleus, with the nitrogen atoms forming the benzimidazole rings paired upon adjacent carbon atoms of said aromatic nucleus, and R' is selected from the group consisting of (1) an aromatic ring, (2) an alkylene group having from four to eight carbon atoms, and (3) a heterocyclic ring selected from the group consisting of (a) pyridine, (b) pyrazine, (c) furan, (d) quinoline, (e) thiophene, and (f) pyran, in a solvent capable of dissolving said polymer,

b. depositing a film of said solution upon a support,

c. evaporating an amount of solvent from said film sufficient to allow the formation of a thin solid layer on the exposed surface of said film having a density which is substantially greater than that of the remaining portion of said film on which said solid layer of increased density is formed, and

d. washing the resulting film with a non-solvent for said polymer to remove residual solvent thereby producing a semipermeable membrane suitable for a reverse osmosis separation.

3,841,493

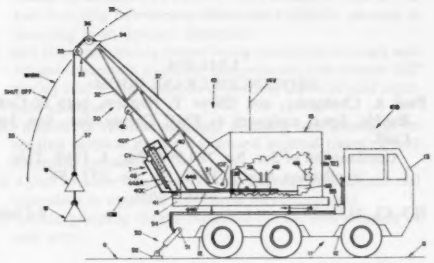
MOMENT MONITORING SYSTEM FOR HYDRAULIC-PISTON TYPE CRANES

William E. Jackson, 3726 Ernst St., Omaha, Nebr. 68112, and James M. Becker, 5112 N. 78th St., Omaha, Nebr. 68134

Continuation-in-part of Ser. No. 259,565, June 5, 1972, Pat. No. 3,771,667. This application Sept. 28, 1973, Ser. No. 401,832

Int. Cl. B66c *13/48*

U.S. Cl. 212—39 **8 Claims**



1. In a crane burden manipulation apparatus comprising a weighty base member normally stably supported upon a suitable underlying substrate whereby at apparatus stable conditions the base member extends vertically along an upright-axis, said crane further comprising an elongate boom type burden manipulation member having a tip end located remotely laterally outwardly offset from the apparatus base member and also having a butt end pivotably attached at a butt-pivot to the base member whereby the elongate boom is supported by the underlying substrate through said weighty base member, the crane apparatus also comprising a dual-directional hydraulic-piston including a plunger portion surrounded by and extendable from a casing with the plunger at a plunger-pivot being pivotably attached to the boom laterally outwardly from the butt-pivot and with the casing at a casing-pivot being pivotably attached to the base member remote from the boom, said crane apparatus including a pumpable reservoir of hydraulic motive fluid controllably deliverable through a first line and through a second line communicating with the casing interior on opposite sides of the extendable plunger thereby permitting selectable changes in the boom angularity and in the resultant burden moment, the improvement of burden moment monitoring system and including compensation means for the progressive decrease in burden moment critical-level as the boom angle becomes steeper with respect to the underlying substrate and said system comprising:

A. Hydraulic pressure differential sensing means comprising a cylinder internally provided with a reciprocatable barrier for motive hydraulic fluid, said first line and second line sources of motive fluid communicating with the

cylinder interior on the forward and the rearward sides respectively of said reciprocatable barrier;

B. A hydraulic pump comprising a housing internally provided with a ram that is co-reciprocatable with said barrier and located externally of the pressure differential sensing means cylinder, the hydraulic pump housing chamber being substantially filled with hydraulic metering fluid which is isolated from the hydraulic motive fluid;

C. A pressure-responsive device communicating with and sensitive to the metering fluid of said hydraulic pump;

D. At least one transducer of the hydraulic-electrical type and including said pressure-responsive device;

E. A warning indicator electrically connected to the transducer to caution the crane operator that some prescribed subcritical-level pressure of metering fluid has been attained whereby the crane operator might take corrective action to decrease the burden moment by increasing the boom angle through the dual-directional hydraulic-piston; and

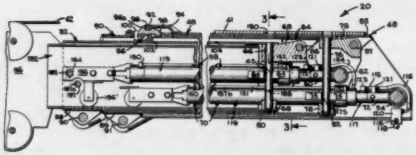
F. Yieldable resistance means bearing against the pressure-responsive device to make said device less sensitive to the hydraulic metering fluid and progressively less so at steeper boom angles thereby providing compensation means.

3,841,494

SEQUENCED CRANE BOOM

Paul A. Chalupsky, and Oliver T. Nephew, both of Cedar Rapids, Iowa, assignors to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 780,993, Dec. 4, 1968. This application Aug. 2, 1972, Ser. No. 277,186
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **9 Claims**



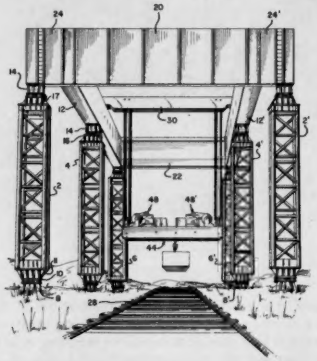
1. In a telescoping boom having an outer fixed section, movable intermediate and inner boom sections, means for connecting a first power cylinder between the outer and intermediate boom sections for extending the latter, means for connecting a second power cylinder between the intermediate and inner boom sections for extending the latter, each of the cylinders including telescoping rod and case elements defining cavities effective to cause extension and retraction of the cylinders in response to fluid pressure, fluid supply means for directing fluid under pressure successively through the first and second cylinders, wherein the improvement comprises piston means in the extension cavity of said first cylinder having a first effective piston area exposed to fluid pressure from said supply means and an auxiliary piston, said second cylinder having piston means of larger effective area than the first area of said first cylinder for causing said second cylinder and intermediate boom section to extend before said first cylinder and inner boom section extend in response to fluid pressure, and valve means in said first cylinder piston means for exposing the auxiliary piston area to fluid pressure to augment said first area and cause extension of said inner boom section when the fluid pressure reaches a predetermined value after said intermediate boom section has been extended.

3,841,495

TRAVELING OVERHEAD CRANES

Lester Alexander Dronick, Camp Hill, and Edwin Henry Zimmerman, Harrisburg, both of Pa., assignors to Aycock, Inc., Camp Hill, Pa.

Filed Mar. 2, 1970, Ser. No. 15,438
Int. Cl. B66c *19/00*
U.S. Cl. 212—125 **4 Claims**



1. A portable traveling overhead crane comprising parallel spaced-apart runway girders, column means supporting said runway girders at a predetermined level above ground level, a truck on each of said runway girders, and a bridge beam extending between said runway girders and having its ends supported on said trucks,

a hoist beam disposed beneath said bridge beam,

first and second bridge beam blocks removably mounted on said bridge beam adjacent to said trucks,

first and second hoist beam blocks removably mounted on said hoist beam adjacent to the ends thereof,

first and second cables reeved through said blocks whereby said hoist beam is suspended from said bridge beam,

first and second cable drum means on said hoist beam, each of said cable drum means comprising a pair of side-by-side drums mounted on a common shaft, each of said cables having one of its ends connected to one of said drums of one of said cable drums means and the other one of its ends connected to the other of said drums of the same cable drum means,

each of said first and second bridge beam blocks and hoist beam blocks comprising a compound block having a plurality of larger diameter sheaves and a plurality of smaller diameter sheaves, and an equalizer sheave adjacent to each of said hoist beam blocks, the said cable for each of said sets of blocks extending from one of said drums over an outside large diameter sheave of the associated hoist beam block thence to the outside small diameter sheave of the associated bridge beam block, thence alternately over one half of the small diameter sheaves of the said hoist beam blocks and bridge beam blocks, thence being reeved outwardly over the larger diameter sheaves of said bridge beam and hoist beam blocks and extending to said equalizing sheave,

first and second drive means on said hoist beam for rotating said drums, and

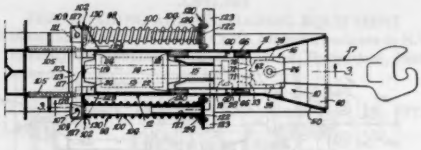
means on said hoist beam for engaging a load which is to handled by said crane, whereby,

the provision of said cable drum means and said drive means on said bridge beam permits disassembly of said hoist beam from said crane at ground level by removal of said bridge beam blocks from said bridge beam and two-blocking of said bridge beam blocks and said hoist beam blocks; and permits assembly of said hoist beam to said crane at ground level by raising said bridge beam blocks to said bridge beam and securing said bridge beam blocks to said bridge beam.

3,841,496
END OF CAR CUSHIONING DEVICE

Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Filed July 26, 1972, Ser. No. 275,194
Int. Cl. B61g 9/08, 9/16
U.S. Cl. 213—43 16 Claims

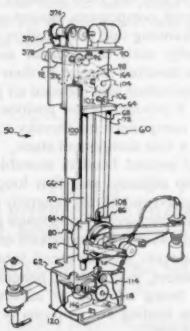


1. An end of car hydraulic cushioning device for a railway car, including fixed and movable assemblies and a return spring assembly, said fixed assembly being adapted to be secured to said railway car, and said movable assembly being slidable relative to said fixed assembly and being adapted to have a coupler secured to the front end of said movable assembly, said return spring assembly cooperating with said assemblies to force said movable assembly toward a normal position relative to said fixed assembly, said return spring assembly comprising an elongated rod having its rear end operatively connected to the rear end of said movable assembly and extending forwardly, said elongated rod having a spring stop adjacent its forward end, an abutment fixed relative to the fixed assembly and located intermediate the front and rear ends of said elongated rod, and a spring mounted on said rod between said spring stop and said abutment to be compressed therebetween in response to a buff impact on the coupler and thereafter to force said movable assembly forward toward its normal position relative to said fixed assembly.

3,841,497
MOTION TRANSLATING APPARATUS AND CONTROLS THEREFOR

Mario Cuniberti, Columbus, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 6, 1972, Ser. No. 295,530
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BT 24 Claims



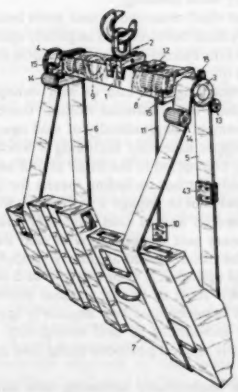
1. Apparatus for controlling relative motion of a plurality of components comprising

a. an element to be selectively rotated;
b. carrier means for journally supporting said element;
c. means for moving said carrier means to cause said element to travel along a predetermined path, said path having a first portion along which said element is not to be rotated and a second portion along which said element is to be rotated;
d. means for rotating said element;
e. means for sensing the position of said element on said path and providing a signal when said element is on one of said portions;
f. means responsive to said sensing means signal for connecting said element rotating means to rotate said element when said element is traveling along said second portion of said path;
g. an indexing hub means journally supported in said carrier means;
h. clutch means for selectively connecting said indexing hub means to said element to be selectively rotated;
i. said carrier moving means reciprocating said carrier means along a linear path;
j. means for actuating said clutch means to selectively connect said indexinb hub means to said element to be selectively rotated when said element is traveling in a first direction along said path;
k. said carrier moving means reciprocating said carrier means along a vertical linear path, in which said first portion of said vertical path is the first upward vertical movement of said carrier means, and in which said clutch means is actuated to connect said rotatable element to said indexing hub means when said rotatable element is traveling in an upward direction;
l. said element rotating means being connected through said rotatable element to rotate said indexing hub means 180° during said second portion of vertical travel of said rotatable element;
m. means for maintaining said indexing hub means at its rotated position during downward vertical travel of said rotatable element;
n. a pair of arms mounted on said indexing hub means and extending in opposite directions therefrom; and
o. article grasping means mounted on the end of each of said arms.

3,841,498
DEVICE FOR TURNING AND TRANSPORTING HEAVY WORKPIECES

Klaus Heidrich, Netphen-Dreistiefenbach; Lothar Kietz, Freudenberg-Lindenberg, and Werner Sziburies, Huttental-Weidenau, all of Germany, assignors to Kabelschlepp Gesellschaft mit beschrankt Haftung, Siegen, Germany

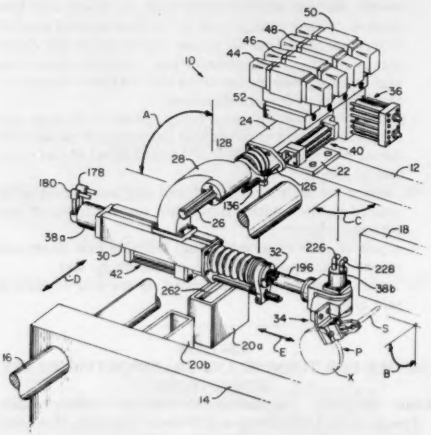
Filed July 27, 1973, Ser. No. 383,179
Int. Cl. B65g 17/48
U.S. Cl. 214—1 QC 3 Claims



1. A device for turning and transporting heavy workpieces, which comprises a traverse, suspension means connected to

said traverse at the central portion thereof for selectively suspending said traverse on supporting means, two driving rollers respectively arranged at each end of said traverse for driving an endless belt adapted to support a workpiece, motor means associated with said traverse, and shaft means drivingly connecting said shaft means with said rollers, said driving rollers being mounted on said shaft means in a semi-cardanic manner.

3,841,499
WORK TRANSFER APPARATUS
Calvin Penfield Bullard, Wilbraham, Mass., assignor to Armflex, Inc., East Longmeadow, Mass.
Filed Oct. 31, 1973, Ser. No. 411,330
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 BD **11 Claims**



1. Apparatus for the transfer of work between two mutually spaced stations comprising:

a. a stationary main housing;

b. an operator shaft mounted in said main housing for rotational movement between two angularly spaced positions;

c. a sweep arm extending in a plane substantially normal to the axis of said operator shaft;

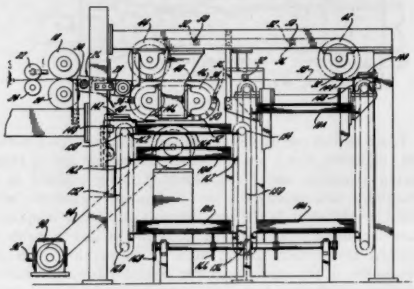
d. means connecting one end of said sweep arm to said operator shaft for rotational motion therewith and for linear movement longitudinally of said operator shaft;

e. a work gripper assembly including a work gripper tool operatively connected to the other end of said sweep arm, said assembly further including means for operating said work gripper tool to engage a workpiece with said sweep arm disposed in one of said angularly spaced positions and to release said workpiece with said sweep arm disposed in the other of said angularly spaced positions;

f. drive means operatively connected to said sweep arm and said operator shaft to impart angular movement to said sweep arm between said two angularly spaced positions and linear movement to said sweep arm between two longitudinally spaced positions along said operator shaft; and

g. means for sequentially actuating said drive means to locate said gripper tool at one of said stations during one phase of its operating cycle and at the other of said stations during another phase of said operating cycle.

3,841,500
APPARATUS FOR STACKING FLAT FLEXIBLE COMPONENTS
Toivo A. Helminen, Winneconne, Wis., assignor to Kimberly-Clark Corporation, Meenah, Wis.
Filed Apr. 6, 1972, Ser. No. 241,699
Int. Cl. G65g *57/04*
U.S. Cl. 214—6 FS **8 Claims**



1. Apparatus for stacking generally flat components each of which have one end wider than the other and which are traveling in two adjacent rows, one of said rows having the wider end of each component leading in the downstream direction and the second row having the shorter end of each component leading in the downstream direction, comprising in combination:

a plurality of transversely extending first headers movable about an endless loop and adapted to successively contact the downstream leading end portions of the components of said first row, said endless loop being elongated and having generally flat upper and lower portions with said loop upper portion being gnerally coplanar to the components of said first row as said components are advanced down stream into contact with said first headers, said headers each having fluid passages,

means for communicating a reduced air pressure to said first headers and the fluid passages therein for holding said contacted components against said header,

means for advancing said first headers around said endless loop whereby each said header and component held thereby are inverted relative to their original position,

means for terminating said reduced air pressure of said first headers at a predetermined position of each header to release the component and thereby accumulate said components in a first component stack,

a plurality of second headers movable around a second endless loop adjacent said first loop, said second loop being elongated and having generally flat upper and lower portions with said second loop lower portion being generally coplanar with the components of said second row as said components are advanced into contact with said second headers, said second headers having fluid passages and being adapted to successively contact the downstream leading end portions of the components of said second row,

means for applying a reduced air pressure to said second headers for holding the leading end portion of each of said contacted components against said second headers, means for advancing said second headers about said second loop and terminating said reduced air pressure applied to said second headers after each header has carried a component held thereby to a predetermined position so that said components are released and accu-

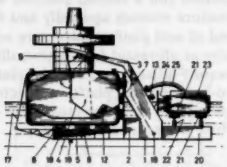
mulated in a second component stack with the wide end of each of the components in said second stack being parallel to and on the same side of said component as are the wide ends of the components of said first stack.

3,841,501

SHIP LOADING AND UNLOADING EQUIPMENT

Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Nov. 17, 1972, Ser. No. 307,347
Claims priority, application Netherlands, Nov. 18, 1971, 71.15916
Int. Cl. B65g 67/58
U.S. Cl. 214—13 **7 Claims**



1. Apparatus for transferring bulk materials to or from vessels, comprising an at least partially L-shaped buoyant body of variable buoyancy having an upright portion and a horizontally extending portion adapted to engage respectively with one side and the bottom of a said vessel, and material-handling means mounted on said upright portion to transfer bulk materials relative to the vessel, said body terminating laterally outwardly away from said upright portion in said horizontally extending portion and being open on the side opposite said upright portion whereby said body can move into material transfer position relative to said vessel by movement of said body laterally relative to the longitudinal axis of said vessel with said horizontally extending portion moving laterally of said vessel beneath said vessel and said upright portion moving laterally of said vessel into engagement with said one side of said vessel.

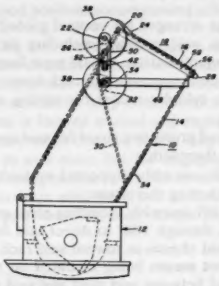
3,841,502

HOPPER WITH INTERLOCKED CHARGING DOOR

Donald B. De Noyer, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 13, 1972, Ser. No. 305,921
Int. Cl. B65g 65/52
U.S. Cl. 214—17 B **10 Claims**

1. A storage and transfer hopper comprising an elongated hollow body including a charging end and a discharging end, an outer door at the charging end, and an interlocked inner door spaced therefrom within the hollow body, wherein the outer and inner doors are connected to rotatable generally parallel shafts, each of said shafts having alignable engagement means mounted thereon, a movable locking arm engagable with the inner door shaft engagement means to prevent rotation of the inner door and door shaft while the outer door shaft is rotatable or open, which locking arm is movable from engagement with the inner door shaft engagement means to



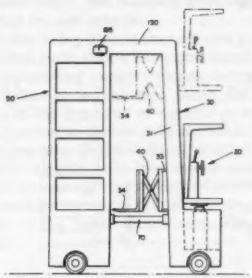
engagement with the outer door shaft engagement means to prevent rotation of the outer door and door shaft while the inner door shaft is rotatable or open.

3,841,503

MATERIAL HANDLING SYSTEM

Edwin A. Hollenbach, Paoli, Pa., assignor to Drexel Industries, Inc., Horsham, Pa.

Division of Ser. No. 160,600, July 8, 1971, Pat. No. 3,727,778.
This application Mar. 7, 1973, Ser. No. 338,919
Int. Cl. B60p 1/44
U.S. Cl. 214—75 R **1 Claim**



1. A material handling fork lift vehicle for handling palletized loads in a room having a ceiling, said vehicle comprising:
a. a divided wheeled chassis having a forward section and a rearward section spaced apart from each other;
b. a high-rise rack tower on said forward section of said chassis;
c. said rack tower including a plurality of greater than three receiving compartments arranged vertically one above the other;
d. a high-rise mast of fixed height secured in fixed position on said rearward section of said chassis and spaced rearwardly from said rack tower;
e. the upper end portion of said mast being connected by a horizontal bridge portion to the upper end of said rack tower, whereby said rack tower, mast and bridge portion form an arch-like structure having a through opening from the bridge portion down to the surface on which said wheeled chassis is supported;
f. two horizontally disposed tie bars, each connected between one side of said mast and the corresponding side of said rack tower, each tie bar being vertically adjustable to provide structural support to said arch-like structure at any selected vertical level;

g. roller means at said bridge portion adapted to cooperate with guide rail means supported from the ceiling to provide lateral support for said high-rise rack tower and mast;

h. a carriage arranged for vertical guided movement along said mast, said carriage including an operator station which projects outside of said mast from that side of said mast which is opposite said rack tower;

i. hydraulic cylinder means for raising and lowering said carriage;

j. an overhead protective guard for said operator station and movable therewith;

k. a fork lift assembly supported on said mast and having forks projecting therefrom;

l. said fork lift assembly including pivot means for pivoting said fork through 180° to direct said fork toward either side of said chassis or toward said rack tower;

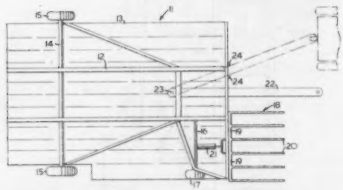
m. said pivot means being mounted on said carriage and positioned between said mast and said rack tower;

n. said fork lift assembly also including scissors-like extension and retraction means for moving said fork into and out of any selected one of said rack tower compartments and for moving said fork laterally outwardly to either side of said chassis through said opening in said arch-like structure, said arch-like structured chassis allowing said fork to engage a load on either side of said chassis at the level of the supporting surface for said wheeled chassis.

3,841,504
BALE LOADER

Paul Spasuik, Box 146, Unity, Saskatchewan, Canada

Filed June 2, 1972, Ser. No. 259,306
Claims priority, application Canada, Feb. 1, 1972, 133657
Int. Cl. B60p *1/48*
U.S. Cl. 214—78 **1 Claim**



1. A bale loader comprising

a rigid platform structure of generally rectangular configuration,

wheel means supporting said platform structure for ground movement in a generally horizontally extending parallel relation to the ground,

an elongated hitch bar extending forwardly of the forward end of said platform structure and having a forward end provided with means for effecting a detachable articulated draft connection with a tractor about a first vertical a. s generally fixed with respect to the tractor at a rearward central location with respect thereto,

means pivotally connecting the rearward end of said hitch bar adjacent the forward end portion of said platform structure centrally of the width thereof for swinging movement about a second vertical axis fixed with respect to said platform structure between a transport position wherein said hitch bar extends longitudinally of said platform structure with said first and second pivotal axes substantially longitudinally aligned so that said platform structure is in general longitudinal alignment with a pulling tractor when pulled forward thereby and a bale lifting position wherein said hitch bar extends angularly of said platform structure with said first axis offset laterally with respect to said second axis,

releasable stop means carried by the forward end of said platform structure and engaged with said hitch bar intermediate the ends thereof for releasably retaining said hitch bar in said bale lifting position so that approximately one-half of said platform structure is disposed laterally outwardly of a pulling tractor when said platform structure is pulled thereby with said hitch bar in said bale lifting position,

a generally rigid bale lifting structure having a width less than half the width of said platform structure disposed within the aforesaid laterally outwardly disposed one-half thereof,

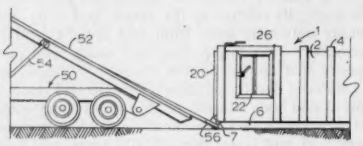
means for pivotally connecting said bale lifting structure to the forward end of said platform structure for pivotal movement about a laterally extending horizontal axis fixed with respect to said platform structure between a first position wherein the bale lifting structure extends downwardly and forwardly from the forward end of said platform structure to engage the undersides of a bale on the ground during forward movement of the platform structure by a pulling tractor with said hitch bar in said bale lifting position and a second position wherein said bale lifting structure extends upwardly and forwardly of the forward end of said platform structure so that a bale engaged thereby as aforesaid falls rearwardly therefrom onto the rearwardly adjacent area of the platform, and

means connected between said platform structure and said bale lifting structure for effecting movement of the latter between said first and second positions.

3,841,505
ROLL OFF CONTAINER

Joseph B. Kent, R.D. 2, Cambridge, N.Y. 12816

Filed Feb. 7, 1973, Ser. No. 330,215
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **9 Claims**



1. A self packing and ejecting roll off container comprising a base, an elongated container mounted on the base and having a bottom wall, first and second sidewalls, a ceiling wall, a first end wall and having a second open end, a hinge attached to the second open end adjacent the ceiling wall, and a tailgate attached to the hinge for overlying the open end in completion of the closing of the container, first and second openings in the first and second sidewalls, respectively. and first and second side doors hinged to the first and second walls and covering the first and second openings, a slidable frame mounted within the container for sliding longitudinally therein between the first end and the second end, a blade mounted on the slidable frame and facing the second end, an actuator connected to the slidable frame and connected to the container for pushing the slidable frame and the blade toward the second end and for retracting the frame and blade toward a home position near the first end with the blade being positioned between the first and second doors and the first end, power means connected to the actuator for driving the actuator toward the second end and toward the first end, and control means connected to the power means for controlling application of power to the actuator in a first packing condition and in a second ejecting condition, wherein the actuator

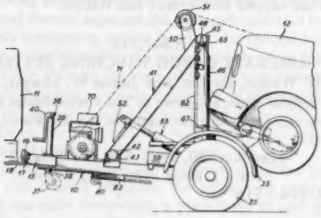
comprises an extensible fluid actuator, and wherein the power means comprises fluid lines connected between the actuator and a first power source on a vehicle and a second power source at a loading station, pressure responsive valve means in the fluid lines for limiting pressure to the actuator in a packing condition, a second valve means in the fluid lines and travel limiting means connected to the fluid actuator and to the second valve means for reversing the second valve means upon extension of the fluid actuator to a predetermined limit in a packing condition, and connection means for selectively connecting either of the fluid lines to one of the first and second power sources.

3,841,506

TOW TRAILER FOR VEHICLES

William M. Smith, Kewanee, Ill., assignor to Redy-Tow, Inc., Evanston, Ill.

Filed Nov. 10, 1972, Ser. No. 305,480
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **15 Claims**



1. A self-contained independent tow trailer unit for coupling with a conventional automobile or truck vehicle to safely suspend and transport towed vehicles which comprises a main frame, a trailer hitch on the front end of the main frame, wheels on the rear end of the main frame supporting the frame above the ground, a lift frame pivoted on said main frame, a transversely extending cross member rigidly secured on the free end of said lift frame, slings suspended from the cross member of said lift frame for cradling a towed vehicle, anchor chains attached to said unit for locking said towed vehicle in said slings, means for swinging said lift frame from a lowered rearwardly extending position to an upright position on said main frame, and struts pivoted on said main frame rearwardly from the lift frame releasably receiving outer end portions of said cross member of the lift frame to cooperate with the lift frame and main frame in forming a rigid triangular structure locking the lift frame in fixed upright position on the main frame.

3,841,507

LOAD HANDLING APPARATUS

Robert D. Barwise, Rt. 2, Box 208, Bovey, Minn. 55709

Filed Mar. 29, 1973, Ser. No. 346,184
Int. Cl. B66c *1/42, 23/36*
U.S. Cl. 214—92 **12 Claims**

1. A load handling apparatus for use with a load skidding vehicle of the type adapted to hold a front end of an elongated load at a load transport position rearwardly of the vehicle and to drag the load over terrain, said load handling apparatus including:

boom means extending rearwardly of the vehicle;

grapple means depending from the boom means;

means to position the grapple means over a load;

said grapple means having a pair of arcuate, interiorly opposed grapple arms;

each said grapple arm having a first end pivotally assembled to a grapple block, and each having a second free end pivotally movable between an open position to straddle a load and a closed position encompassing a first end of the load;

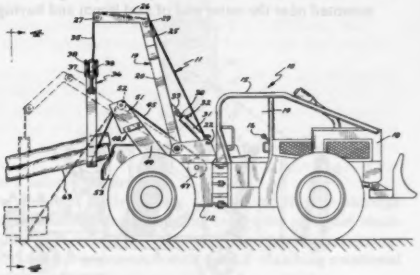
means for opening and closing said grapple arms;

closed loop means connected to the free ends of said grapple arms whereby when said arms are closed around the end of a load, an interior loop constituted as a portion of the loop means is formed around and engages the load;

a main line connected at one end to the loop means;

means to draw in said main line for engaging, lifting and pulling a load independent of the boom means;

said means to draw in said main line including main line guide means positioned on said vehicle independent of



said boom means, and including main line take up means supported on said vehicle;

said main line being trained through said guide means;

said main line guide means being positioned on said vehicle on an upstanding support means independent of said boom means at an elevation above the load transport position of the front end of the load to locate said main line in position to lift and drag the load;

said main line take up means being adapted to draw in said main line whereby said loop means and main line are operable to raise the end of the load and the grapple arms to the load transport position and to drag the load independent of the boom means when the vehicle moves forward.

3,841,508

REFUSE VEHICLE WITH A SEMI-AUTOMATED REFUSE CONTAINER PICK-UP AND UNLOADING DEVICE

Franklin D. Ebeling, and Ernest C. Ebeling, both of 1608 W. 24th St., Plainview, Tex. 79072

Filed Sept. 27, 1972, Ser. No. 292,794
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **13 Claims**

1. A semi-automated refuse vehicle, having a refuse receptacle, which vehicle comprises;

a. a wheeled frame,

b. a substantially closed refuse body mounted on said wheeled frame,

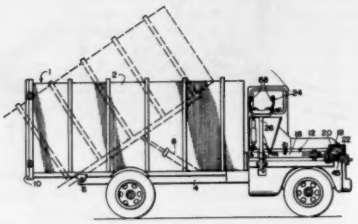
c. a source of fluid under pressure,

d. a boom pivotally mounted on a side of said wheeled frame and being adapted to extend along a side of said frame, when in one position, which boom is mounted to move about a transverse axis, which axis is angularly inclined less than **90** degrees relative to the horizontal, so as said boom moves outwardly, the outer end thereof will be moved downwardly to engage a refuse container and, as the outer end of the boom moves inwardly, the outer end thereof will be moved upwardly to enable refuse to be discharged from the refuse container into a refuse receiving receptacle at a higher elevation,

1. a first fluid actuated cylinder-plunger assembly connected to said boom and to said frame to move said boom relative thereto,
2. conduit means leading from said source of fluid under pressure to the cylinder of said first fluid actuated cylinder-plunger assembly,
3. valve means within said conduit to selectively direct fluid under pressure to one end of said first fluid actuated cylinder, when said valve is in one position, to move the plunger thereof in one direction and to direct fluid to the opposite end of said cylinder to move the plunger thereof in the opposite direction, when said valve is in another position, so as to move said boom selectively outwardly and inwardly,

e. a pair of refuse container engaging arms on said boom near the outer end thereof,

f. a second fluid actuated cylinder-plunger assembly mounted near the outer end of said boom and having one



end thereof connected to said boom, the other end of said second fluid actuated cylinder-plunger assembly being connected to at least one of said arms to cause relative movement therebetween to grip the refuse container,

4. valve means, which, when in one position, directs fluid into one end of said second fluid actuated cylinder and directs fluid outward from the opposite end thereof to move at least one of said arms relative to said boom to engage the refuse container and said valve means, when moved to another position, directs fluid into the opposite end of said second fluid actuated cylinder, and out through the other end thereof to disengage said arms from the refuse container,

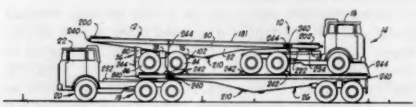
g. tipping means associated with said boom to move said arms about the longitudinal axis of said boom to invert the refuse container, when said boom is in the inner-most position.

3,841,509

APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER

Finis Lavell Chisum, Rt. 5, Woodcrest Height, Claremore, Okla. 74017

Filed Feb. 28, 1973, Ser. No. 336,869
Int. Cl. B60p *1/28*
U.S. Cl. 214—506 **8 Claims**



1. In combination:
first and second semi-trailers and tractors, each of the semi-trailers having an elongated load bed and support wheels adjacent the rear end of the load bed, each tractor having ground wheels, a fifth wheel for connection to the front end of the respective semi-trailer, and an operator's cab, and each semi-trailer and tractor having a wheel base defined by the distance between said support wheels and ground wheels;

an elongated track connected to the first tractor and extending longitudinally thereof, said elongated track having said fifth wheel slidably connected thereto for movement forwardly and rearwardly of the tractor whereby the wheel base of the first semi-trailer and tractor can be reduced to a length no greater than the length of the load bed of the second vehicle, said elongated track sloping upwardly whereby the forward end of the first semi-trailer will be raised when the fifth wheel is moved forwardly such that the underside of the first semi-trailer will clear the rear end of the first tractor; and

means on one of the semi-trailers for raising the rear end of the load bed of the first semi-trailer when the first semi-trailer is positioned on the load bed of the second semi-trailer sufficiently high to clear the cab of the second tractor,

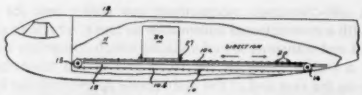
whereby the first semi-trailer and tractor can be transported on the second semi-trailer and tractor.

3,841,510

AIRCRAFT CARGO WINCHING SYSTEM

Roger H. Walton, Dayton, and James W. Strayer, New Carlisle, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 30, 1973, Ser. No. 355,822
Int. Cl. B60p *3/00;* **B41j** *33/10*
U.S. Cl. 214—516 **7 Claims**



1. A cargo towing cable or chain apparatus comprising; a main, endless cargo towing, drive cable or chain mounted for rotational, back-and-forth movement in a cargo compartment and adapted to be power driven; a plurality of releasably-engageable, cable or chain-attachment means positioned in evenly-spaced relation along said main, endless, drive cable or chain; first, intermediately-disposed cargo-towing means releasably interconnected between a cargo load to be towed into the cargo compartment and any selected one of the said cable or chain-attachment means, and automatically operative on the initial rotational movement of said main, endless, drive cable or chain to move said cargo load into the cargo compartment; and second, quick-release, cargo towing means releasably mountable to the cable or chain attachment means of said main, drive cable or chain in engaged relation with, and thereby automatically operative to precisely move said on-board cargo load forward or aft to a storage position in the cargo compartment, on the subsequent rotational movement of said main, endless, drive cable or chain; each of said plurality of releasably-engageable, cable or chain-attachment means comprising a swaged ball element; and said first, intermediately-disposed cargo-towing means comprising an auxiliary cable or chain; said auxiliary cable or chain incorporating a hook member positioned on one end thereof and adapted for releasable attachment to the cargo to be loaded; and a combined swaged ball element-engaging and main cable or chain-receiving and supporting means positioned on the other end thereof for releasable attachment to any selected one of the said swaged ball elements, and for supporting said main cable or chain in correct position therein to ensure retention of the selected swaged ball element in said means.

3,841,511

TRANSPORT SYSTEM AND APPARATUS THEREFOR

Jack B. Haun, 4348 Garden Dr., Salt Lake City, Utah 84117

Filed Nov. 19, 1973, Ser. No. 416,729
Int. Cl. B62d 53/06
U.S. Cl. 214—516 10 Claims

1. Apparatus for transporting materials comprising

a modular shipping container having a bottom, spaced side walls, spaced front and rear end walls interconnecting the bottom and the side walls at opposite ends thereof, a top interconnecting the side and end walls and a door providing access to the interior of the container through a wall thereof;

a rear locking assembly on the undersurface of the bottom at the end thereof adjacent the rear wall, said rear locking assembly comprising a plate fixed to and spaced from the bottom, a slot formed in the plate and extending from the edge of the plate at the rear of the bottom towards the center of the plate along the centerline of the bottom, and a king pin comprising a post extending downwardly from the plate on the centerline of the bottom, said pin being positioned forwardly of said slot; and

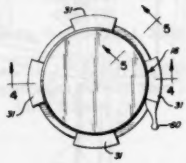
a front locking assembly on the undersurface of the bottom at the end thereof adjacent the front wall, said front locking assembly comprising a plate fixed to and spaced from the bottom, a slot formed in the plate extending from the edge of the plate at the front of the bottom towards the center of the plate, and lock means arranged to extend into the slot to secure a king pin therein.

3,841,512

TAMPER-PROOF CLOSURE ARRANGEMENT

Albert L. Botkin, 3018 Hood Ave., Chicago, Ill. 60659

Continuation-in-part of Ser. No. 182,073, Sept. 20, 1971, Pat. No. 3,716,162. This application Feb. 9, 1973, Ser. No. 331,065
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—7 7 Claims



1. In a container having an open upper end and a neck therebelow and having a cap to cover said open end while extending over the outer perimeter thereof, tamper-proof means comprising a plurality of flexible ears integral with and distributed about the perimeter of the neck of said container, extending outwardly therefrom and defining with said neck and upwardly opening recess about said neck, said tamper-proof means having a frangible portion whereby said ears may be removed from said neck, said ears and said cap having interlocking elements that engage each other when said cap is placed in sealing engagement with said open upper end to prevent removal of said cap without separating said frangible portion from said container.

3,841,513

CONTAINER HAVING SAFETY CLOSURE

Ian A. O'Connor, 10447 S.W. 108 Ave., Apt. 102E, Miami, Fla. 33156, and James A. O'Connor, 477 Harbor Dr., North, Indian Rocks Beach, Fla. 33535

Filed Aug. 10, 1972, Ser. No. 279,316
Int. Cl. B65d 55/02
U.S. Cl. 215—9 9 Claims

1. In a safety container:

a. a container body having an opening therein through which the contents, including solid pills or liquid medicines and chemicals, may be dispensed, said container opening being provided with part of matching rotational retaining means,

b. an insert having retaining means thereon matching with and fitting said rotational retaining means in said opening, said insert being thereby rotated in position in said opening so that the top of said insert is substantially even and flush with the top of said container opening whereby it is not possible for a small child to grasp any significant part of the insert with the fingers for removal from said container opening, said insert being retained in said opening by said matching retaining means and it requiring rotation for removal therefrom,

c. a closure fitted on said container body and over said insert when said insert is in said opening in said container body, said closure having a through opening therethrough whereby if said closure were placed on said container body without said insert in place said container contents would be exposed to the outside and the contents could dispense therefrom, thereby to discourage the use of the container without the insert and to encourage the replacement of the insert after removal,

d. an irregularly-shaped projection on said closure functioning as a tool providing the only ready means whereby the insert which is at least substantially flush may be rotated and removed,

e. and an irregularly-shaped recess in said insert complimentary with and matching said projection in one and only one position of said projection and recess, whereby it is necessary to align and match the recess and projection in order to use the closure and projection as a tool for turning and removing the insert thereby providing an impendiment to the use by a small child.

3,841,514

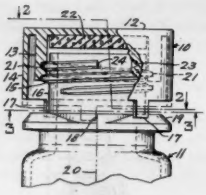
SAFETY CLOSURER

Gary B. Montgomery, and Peter P. Gach, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Feb. 14, 1973, Ser. No. 332,512
Int. Cl. B65d 55/02
U.S. Cl. 215—9 10 Claims

1. A safety package comprising a container and a cap, said container having a bottom, a sidewall, a neck and an annular

shoulder extending between said neck and said sidewall, and at least one lug recess in said shoulder, said cap having a top, an inner wall depending from said top, cooperating threads on said container neck and said inner wall for retaining said cap in sealing position on said container, a liner on the underside of said cap top, an outer skirt depending from said top in concentric relationship to said inner wall, and at least one



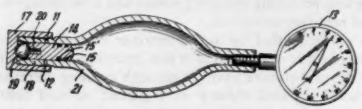
depending lug on said outer wall having a lower portion extending below the bottom of said inner wall that is adapted for engagement in said recess when said cap is turned to sealing position, the trailing side of said lug engaging the back wall of such recess to prevent said cap being unscrewed off of said neck, and cooperating means on said cap and said container for preventing the rotation of said cap onto said container neck beyond such sealing position.

3,841,515

APPARATUS FOR THE PRESERVATION OF BIOLOGICAL SUBSTANCES

Ralph E. Schwartz, Lindenhurst, N.Y., assignor to Redeco, Inc., East Islip, N.Y.

Division of Ser. No. 757,195, Aug. 8, 1968, Pat. No. 3,579,999.
This application Apr. 6, 1971, Ser. No. 131,803
Int. Cl. F25j *1/00*; B65d *53/00*
U.S. Cl. 220—3 **8 Claims**



1. A vessel for the storage of blood comprising:
a housing of material having a modulus of elasticity, yield point, thermal coefficient of expansion and thickness able to withstand a selected internal pressure of up to 35,000 p.s.i. and temperature changes of between 4° and −21°C without appreciable change in volume, said housing embracing a blood storage cavity;
a piston mounted for slidable hermetic entry into said cavity; and
leverage means for controlling the pressure within the container by forcing said piston into said cavity, said piston surface and internal surface of said housing at said cavity being formed of a material inert to blood.

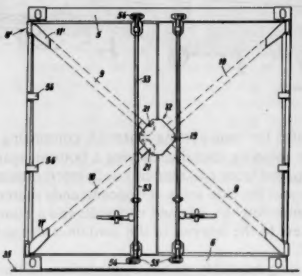
3,841,516

CONTAINER

Helmut Marz, Beilstein, Germany, assignor to Martin Fiala KG, Korntal, Germany

Filed May 2, 1972, Ser. No. 249,548
Claims priority, application Germany, May 3, 1971, 2121686
Int. Cl. B65d *87/00*; E05c *19/00*
U.S. Cl. 220—1.5 **23 Claims**

1. In a container having top and bottom and side walls and front and back end faces interconnected to form a container, one said end face comprising wings forming a closure and access gate for the container, hinge means near the top and bottom of the outer edge of each wing comprising first parts fixed to the container and second parts fixed to the wings, diagonal support arms and positive coupling means near the center of the inner edges of said wings for positively interconnecting with said diagonal support arms respectively as to the inner edges of said wings when the wings are in closed position, and means pivotally interconnecting each said first part



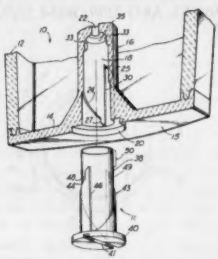
of a said hinge means to the second part thereof for relative pivoted movement thereof on a vertical axis, said means preventing relative movement between the said parts of respective hinge means of a diagonally oppositely located pair of said hinge means in a respective direction of relative lateral movement of said top and bottom walls of said container and permitting relative movement therebetween in the other direction of relative lateral movement of said top and bottom walls of said container.

3,841,517

RECEPTACLE AND PLUG

John C. Lockwood, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.

Filed Sept. 4, 1973, Ser. No. 394,082
Int. Cl. B65d *41/05*
U.S. Cl. 220—40 R **12 Claims**

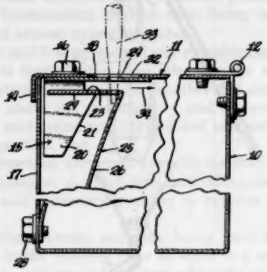


1. A receptacle and removable plug combination wherein the receptacle comprises a body having a substantially cylindrical chamber extending from an orifice in an external surface of said body and with the walls of said cylindrical chamber having a chamber helical ramp facing said orifice; wherein the removable plug comprises a head and a substantially cylindrical stem extending from said head with the surface of said cylindrical stem having a stem helical ramp facing away from said head adapted to engage and rotatably slide upon said chamber helical ramp upon insertion of the plug into the receptacle chamber; and wherein said combination further comprises frictional engagement means for holding the plug within the receptacle upon insertion therewithin.

3,841,518
SAFETY LATCH FOR BOXES

Burgess W. Hines, Kirkland, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 31, 1972, Ser. No. 285,443
Int. Cl. A45j *36/10*; E05c *19/06*
U.S. Cl. 229—55 K 6 Claims



1. The combination of a box having an open side and a cover to close said box side,

a bracket secured to the inside of said cover,

a latch secured to the inside of said box and having a movable portion underlying said bracket and resiliently urged in one direction to latching engagement with a complementary portion of said bracket to prevent opening of said cover,

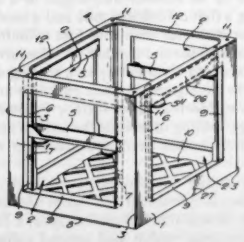
said bracket and said latch having aligned openings, and said cover having an opening in line with said aligned openings for free passage of a blade, whereby said blade may be inserted through said cover opening with its tip within said latch opening and a blade portion spaced from said tip within said bracket opening and engageable with a defining surface thereof to provide a fulcrum point,

tilting action of said blade in a predetermined direction causing said blade tip to be forced against a defining surface of said latch opening to move said latch movable portion in an opposite direction against the urging force and from latching engagement with said complementary portion of said bracket, thereby permitting opening of said cover.

3,841,519
CRATE

Per Sigmund Stromberg, Wesselsvei 11, 2000 Lillestrom, Norway

Filed Mar. 21, 1973, Ser. No. 343,263
Claims priority, application Norway, Mar. 21, 1972, 933/72
Int. Cl. B65d *7/42*
U.S. Cl. 220—83 10 Claims

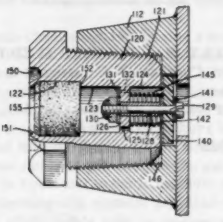


1. A crate for the storage and transport of goods such as bottles and the like, comprising a substantially rectangular bottom wall, vertical columns extending upwardly from all four corners thereof, horizontal beams interconnecting said columns at the top and bottom thereof, at least one side of the crate having an opening, a crossbar spanning said opening and movable vertically thereof between a lowered locked position and an upper position, said opening being of a size sufficient for the removal of the goods therethrough when said crossbar is moved out of its locked position, each of the crate walls defined by said columns and said beams comprising a pair of spaced plates having spacers located therebetween, and said beams being U-shaped in cross-section.

3,841,520
FLAME ARRESTING VENT VALVE

Gerald T. Bryant, Corona, and James L. Mayfield, Garden Grove, both of Calif., assignors to Airco, Inc., New York, N.Y.

Division of Ser. No. 813,574, April 4, 1969, Pat. No. 3,635,599. This application May 20, 1971, Ser. No. 145,572
Int. Cl. B65d *25/00*
U.S. Cl. 220—88 A 2 Claims



1. A safe vent valve comprising

a tubular plug adapted to be mounted in the wall of a container,

said tubular plug having a passageway therethrough, one end of said passageway being in communication with the interior of the container, said tubular plug including a valve seat surrounding said one end of said passageway, a movable valve member centrally mounted in said tubular plug adapted to seat against said valve seat to close said passageway,

spring means to bias said movable valve member away from said valve seat, said movable valve member being responsive to a predetermined minimum pressure within said container to overcome the spring bias and seat against said valve seat,

flame arrestor means affixed to said tubular plug and positioned at the other end of said passageway, said flame arrestor means comprising a sintered metal disc having a porosity and thickness adapted to prevent passage of a flame propagated within said container through said arrestor means.

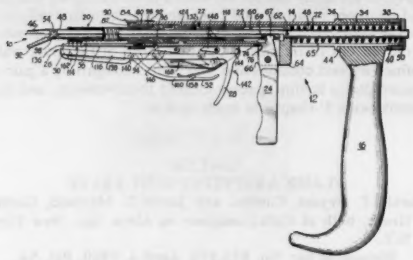
3,841,521
REPEATING LIGATURE GUNS, MULTI-LIGATURE CARTRIDGES AND PREFORMED LIGATURES THEREFOR

Robert K. Jarvik, 17 Douglass Ave., Stamford, Conn. 06906

Division of Ser. No. 064,161, Aug. 17, 1970, Pat. No. 3,887,138. This application Aug. 25, 1972, Ser. No. 283,773
Int. Cl. B65g *33/04*
U.S. Cl. 221—75 24 Claims

1. A ligature cartridge for carrying a plurality of preformed ligatures and adapted for insertion and retention in a ligature gun, comprising a cylindrical ligature carrier adapted for rotation about the cylindrical axis thereof when inserted in the

ligature gun, said carrier comprising an inwardly depending helical track about its periphery at its forward end for engagement by the ligating loops of a plurality of preformed ligatures



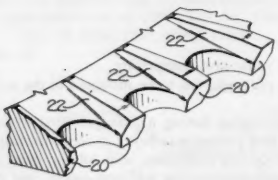
and a cam adapted for engagement with a reciprocating cam actuator of the ligature gun for rotating said ligature carrier one revolution for each reciprocation of said cam actuator.

3,841,522

AGRICULTURAL PLANTER SEED PLATE

John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.

Filed Mar. 16, 1973, Ser. No. 342,181
Int. Cl. B65g *65/48*
U.S. Cl. 221—265 **10 Claims**



1. A seed plate for an agricultural planter and which facilitates selection and discharge of seed to be planted, the plate comprising an annular member having a plurality of circumferentially spaced apart, radially extending fin means around the periphery thereof, each of said fin means being symmetrical about a radial line extending from the center of said member and having sidewalls, opposing sidewalls of adjacent fin means defining therebetween seed cells about the circumference of said member and each pair of opposing sidewalls converging toward said circumference at an included angle of about 20° to a radius so as to aid reception in the seed cells of predetermined quantities of seed.

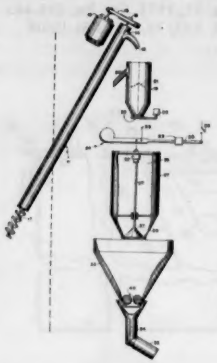
3,841,523

DISPENSER FOR FEED GRAINS AND THE LIKE

Nicholas Friesen, Headingly, Manitoba, Canada, assignor to Happy Horse-Feed Vendors Ltd., Winnepeg, Manitoba, Canada

Filed Dec. 4, 1972, Ser. No. 312,055
Int. Cl. B67d *5/00*
U.S. Cl. 222—2 **15 Claims**

1. An automatic dispensing device for the dispensing of feed grains and the like, operated from a source of power and comprising in combination a measuring tube, means to convey grain from a source of supply to said measuring tube, valve means in the base of said measuring tube, weigh scale means, said measuring tube being operatively connected to said weigh scale means, and discharge means under said measuring tube



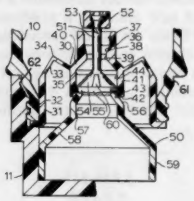
to convey grain from said measuring tube to a discharge location when said valve means opens and token operated means operatively connected to said conveyor means and to said valve means.

3,841,524

AUTOMATIC LIQUID DISPENSER FOR AN INVERTED BOTTLE

Avard Joseph Easter, Modesto, Calif., assignor to Northwest Sanitation Products, Inc., Fort Bragg, Calif.

Filed Mar. 5, 1973, Ser. No. 338,213
Int. Cl. E03d *9/03*
U.S. Cl. 222—57 **3 Claims**



1. A liquid dispenser for use to dispense liquid from an inverted bottle having a neck into a tank at times when buoying water in the tank drops in level, including in combination: a hollow annular stationary member having a neck-engaging portion joined by an annular diaphragm to a central hollow portion having a first cylindrical tube and a second cylindrical tube of greater diameter than said first cylindrical tube connected thereto, said second cylindrical tube having a cylindrical inner surface and terminating in a sealing edge, said first cylindrical tube having an entrance end with an inlet passage provided by a cylindrical inner surface followed by a frustoconical passage leading in toward the axis to an inner surface that is cylindrical and is smaller in diameter than said inlet passage, and

a movable member comprising, successively, an axial stem portion that is cylindrical and lies in and extends beyond both ends of said first cylindrical tube, a first frustoconical portion lying within said second cylindrical tube, a cylindrical portion having an outer periphery substantially identical to the inner periphery of said second cylindrical tube and engaging it in sealing relationship in a first

position of said movable member, and a second frustoconical portion flaring outwardly from said cylindrical portion and engaged in said first portion by said sealing edge of said second tube in sealing position,

said axial stem having at its distal end a cylindrical plug which lies beyond said stationary member in said first position and engages said inlet passage and said frustoconical passage in sealing relation in a second position of said movable member, said cylindrical position and said second frustoconical portion then being moved away from said second cylindrical tube,

whereby in said first position of said movable member liquid from said bottle enters said inlet passage and fills the space between said movable member and said stationary member above the seal made by said second cylindrical tube on said cylindrical portion and said second frustoconical portion, and

liquid is dispensed when said movable member drops to its second position, at which time said cylindrical plug seals against said stationary member to prevent further dispensing,

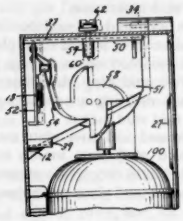
said movable member normally being held in said first position by the buoying force of water in a said tank and moving to said second position when the water level in said tank drops and the buoying force is withdrawn.

3,841,525

AEROSOL SPRAY DEVICE WITH CAM ACTIVATOR

Norman H. Siegel, 2014 Wilson St., North Miami Beach, Fla. 33020

Filed June 14, 1972, Ser. No. 262,539
Int. Cl. G04b *23/10*
U.S. Cl. 222—70 **1 Claim**



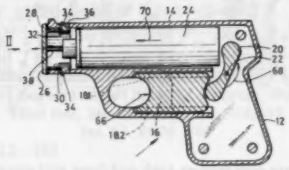
1. In a device for periodically operating an aerosol dispenser can, including a timing circuit, and motor-driven camming means positioned to repeatedly contact a spray nozzle to operate a valve associated therewith, the improvement comprising: a casing element including first and second angularly disposed outer walls, track means carried by said casing element having a principal axis parallel to one of said walls, said casing element defining an enclosure, a chassis element slideably carried by said track means for adjustable movement relative to the other of said walls, said motor-driven camming means being carried by said chassis, said camming means including at least one lobe having a substantially arcuate path of motion, movement of said chassis serving to translationally shift said arcuate path to vary the length of that portion of the path during which said spray nozzle is contacted; means on said chassis projecting outwardly of said casing element to permit manual adjustment outwardly of said enclosure of the position of said chassis element relative to said casing element without opening the latter, said last mentioned means including a projection on said chassis, and a lever pivotally connected to said projection and a fixed point on said casing element.

3,841,526

SIMULATED PISTOL SPRAY PROTECTION DEVICE

Ralph Newton Haskins, Cape Town, South Africa, assignor to Wepron Products (Proprietary) Limited, South Africa

Filed Dec. 4, 1972, Ser. No. 311,504
Claims priority, application South Africa, Dec. 3, 1971, 71/8103
Int. Cl. A63h *3/18*
U.S. Cl. 222—79 **3 Claims**



1. A protection device including in combination:

a. a pistol shaped housing having a handle grip and a hollow barrel open at one end, the housing being provided with at least one locking aperture in the barrel near its open end;

b. a removable closure cap comprising a disc with a central discharge hole, the disc having a diameter greater than the internal diameter of the barrel of the housing for abutting against the open end of the barrel of the housing; a guide tube having a diameter smaller than the disc and extending from the disc, the guide tube being adapted to be inserted into the barrel of the housing; a number of longitudinal cut-outs provided in the guide tube extending from its open end towards the disc; at least one outwardly extending clip element provided externally at the open end of the guide tube to engage with the locking aperture in the barrel of the housing when the guide tube is inserted into the barrel of the housing; and an operating tube extending from the discharge hole in the disc inside the guide tube, and being adapted to abut against a biassed discharge mechanism of a fluid repellent container fitted in the barrel; and

c. a triggering mechanism comprising a slide element slidably mounted in a guide in the housing; and a centrally pivotted lever mounted in the housing; the slide element being adapted to be moved in the guide to abut against one end of the lever so as to pivot the lever causing its other end to move a repellent fluid container placed in the barrel against the action of its biassed discharge mechanism towards the closure cap and against the operating tube for ejection of repellent fluid through the discharge hole in the disc of the closure cap.

3,841,527

HOT MELT APPLICATOR AND METHOD

Warren N. Von Roeschlaub, 58 Morewood Oaks, Port Washington, N.Y. 11050

Filed Apr. 25, 1973, Ser. No. 354,418
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 H **18 Claims**

1. An apparatus for heating and dispensing a sealing material comprising:

a heating tank,

a material storage tank, and

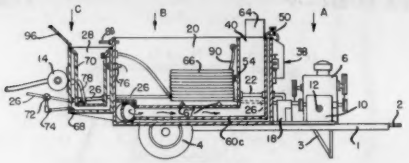
a heat exchange tube bank located within said heating tank, said tube bank being connected at one end to a source of sealing material and at the other end to the storage tank, said heating tank being capable of retaining a heat exchange fluid in heat exchange contact with said tube bank, and said storage tank being open to the atmosphere

and of a size sufficient to provide a residence time of said sealing material in said storage tank;

means for heating said heat exchange fluid;

means for dispensing said sealing material to an area of use;

pump means for moving said sealing material from said source of supply through said tube bank in said heating



tank into said storage tank and from said storage tank to and through said dispensing means; and

means for maintaining said sealing material within a prescribed, predetermined temperature range when the material resides in said tube bank located in said heating tank and when said material resides in said storage tank.

3,841,528

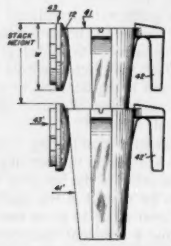
CONTAINER FOR LIQUIDS HAVING HINGED LID ALLOWING EASY STACKING

Harvey Eisenberg, 7 Demarest Rd., Livingston, N.J. 07039

Filed Sept. 29, 1971, Ser. No. 184,693

Int. Cl. B67d *5/60*

U.S. Cl. 222—143 **5 Claims**



1. A carafe comprising,

a. a body formed of foamed plastic and having an elongated cross-sectional configuration, said body having a closed bottom and tapered sidewalls,

b. a pouring lip formed integrally with said body and including a flat surface portion lying in a plane substantially parallel to the plane containing the top end wall of the body, said flat surface portion being intersected by a channel communicating with the interior of the body,

c. an elongated lid formed of foamed plastic and including a flat portion which engages and overhangs the said flat surface portion of the pouring lip when the lid is in the closed position, said lid having a maximum width less than the stack height of the carafe and

d. a hinge member formed integrally with the body and the lid, said hinge member comprising a relatively thin, substantially rigid web portion which is connected to the body by a first section of reduced thickness and to the lid by a second section of reduced thickness, said lid including circular edge portions located at opposite ends of the web and concentric with the said second section of reduced thickness, the radium of the said edge portions being greater than the width of the web.

3,841,529

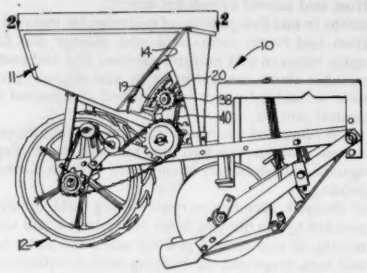
AGRICULTURAL PLANTER

John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.

Filed Sept. 12, 1972, Ser. No. 288,283

Int. Cl. A01c *15/00*

U.S. Cl. 222—177 **5 Claims**



1. An improved seed dispensing means for an agricultural seed planter having hopper means for receiving and containing seed to be dispensed and ground wheel means for engaging the surface of ground over which the planter moves, the seed dispensing means comprising:

drop plate means mounted on said hopper means for defining a seed drop opening through which seed is delivered, stud means extending from said drop plate means into said hopper means,

antifriction bearing means having an inner race engaging said stud means and said drop plate means and an outer race encircling said inner race,

drive plate means mounted on said bearing means outer race for rotation relative to said drop plate means,

seed plate means mounted on said drive plate means for rotation therewith, said drop plate means and said seed plate means each defining a conical surface extending upwardly from said stud means

said bearing means and said drive plate means cooperating for mounting said seed plate means in predetermined spaced relation to said drop plate means and accurately positioning selected seed plate means installed in the seed planter,

said seed plate means and said drop plate means cooperating on rotation of said seed plate means for selecting and dispensing seed while avoiding rubbing contact between said seed plate means and said drop plate means, and

adjustable clearance means penetrated by said stud means and disposed in spaced relation from said drive plate means for establishing an operating clearance for rotation of said seed plate means with said drive plate means, for restraining said seed plate means from disengagement from said drive plate means, and for adjustably varying the operating clearance as required for alternate seed plate means.

3,841,530

POWDER FEEDER

Donald R. Janninck, 1811 N. Lowell Ave., Chicago, Ill. 60639

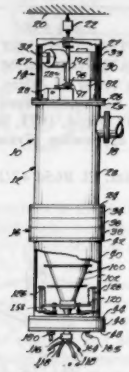
Continuation of Ser. No. 29,900, April 20, 1970, abandoned. This application July 26, 1972, Ser. No. 275,205

Int. Cl. B67d *5/58*

U.S. Cl. 222—189 **18 Claims**

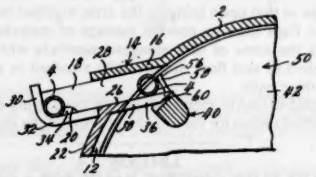
1. Apparatus for feeding fine particulate material at an accurately controlled uniform rate comprising a hopper for storing such material and including a foraminous outlet mem-

ber in its lower end, dispensing means including means for sifting such material from said hopper through said foraminous member and causing material to fall from said dispensing means in a dispersed state and at a predetermined rate, funnel-shaped guide means having its larger end open upward and subtending said dispensing means for receiving therein such dispersed material falling from said dispensing means, said guide means having a downwardly converging smooth continuous inner surface terminating at a small outlet opening in its lower end beneath said upwardly open end, means for directing a flow of gas along said inner surface and causing such gas to flow downward through said guide means for entraining



such material as it falls into and through said guide means and for immediately carrying such material out of said guide means through said outlet opening entrained and dispersed in such gas, and further means for preventing adherence or accumulation of such material on said inner surface of said guide means, such gas flow and said further means thereby immediately and continuously moving such material downward through said guide means as soon as received therein and preventing any significant static accumulation or agglomeration of said material in said guide means, to provide controlled uniform feeding movement of such material from said guide means in said gas.

3,841,531
SODA STRAW DISPENSER
John B. Merila, 6223 E. 127th St., Grandview, Mo. 64030
Filed Aug. 2, 1973, Ser. No. 384,961
Int. Cl. B65g *65/48*
U.S. Cl. 221—189 **6 Claims**



1. A soda straw dispenser comprising:

a. a fixed, generally cylindrical hollow container with its axis disposed horizontally and adapted to contain a quantity of straws therein parallel to the axis thereof, said straws each being of a given length and diameter, and having a downwardly and outwardly inclined chute communicating with the upper portion thereof, said chute being of sufficient width to receive therein a straw parallel to the container axis,

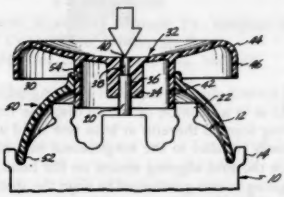
b. a cage disposed concentrically in said container and rotatable therein,

c. manual means for rotating said cage,

d. an elongated straw carrier mounted in said cage eccentrically to the axis thereof and operable by rotation of said cage to pick up a straw from those carried in the container and to transport said straw to the top portion of the container, and

e. cooperating members carried respectively by said chute and said carrier interiorly of said container and operable by rotation of said cage to extract said straw from said carrier and to discharge it into said chute.

3,841,532
DISPENSING PAN FOR AEROSOL CONTAINER
Kenneth W. Gores, 1026 112th N.E., Bellevue, Wash. 98004
Filed Dec. 26, 1972, Ser. No. 318,212
Int. Cl. B67d *5/06*
U.S. Cl. 222—205 **1 Claim**



1. In an aerosol dispenser container for fluid substance to be dispensed by a pressurized propellant, wherein the container includes a top closure element having a centrally located basin including a ring mount surrounding in spaced relation a central island within said basin, a discharge valve having an upstanding hollow stem through which the fluid substance is discharged when the valve stem is depressed and the valve is actuated, the improvement comprising:

a transversely disposed element providing a shallow concave, circular dispensing pan, the periphery of said pan being convexly rounded and merging smoothly with an integral annular skirt, said pan being substantially as broad as said container and covering said basin in overlying relation to the said top closure element;

said element on its underside being coupled to said hollow stem and including a passageway in communication with said stem and terminating in an orifice centrally located in said pan; and

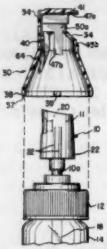
a collar depending from the underside of said element telescopically fitted to said ring mount whereby said element is guided and stabilized when pressure is applied to depress said pan; and

an annulus having a flared skirt bearing on said container at its rim for support, said annulus slideably encircling said depending collar in spaced apart relation with the underside of said element at a location spaced above said ring mount, said annulus serving to guide said collar and limit downward travel of said element.

3,841,533
SPRAY DISPENSER AND SHIELD
Albert Carroll, Hartsdale, N.Y., and Glen L. Beall, Gurnee, Ill., assignors to Schmid Laboratories, Inc., Little Falls, N.J.
Filed Nov. 24, 1972, Ser. No. 30[illegible] 232
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.13 **11 Claims**

1. A dispenser system for administering fluid to a confined location, such as the eye, comprising a spray nozzle having a

head with an orifice, the head having at least one first aligning means thereon, an eye shield having an opening at one end thereof and a sleeve at the other, said sleeve being a closed surface except for a keyway therein which is formed with a shape substantially complementary to that of the head and at least one second aligning means substantially transverse to the longitudinal axis of the shield to mate with the first aligning means on the head, said first and second aligning means positioned to align the orifice toward the shield opening when the keyway of the sleeve is placed over the nozzle head with said



first and second aligning means in a mating relationship when the shield is in a position of use to dispense fluid, the sleeve also having formed thereon at least one third aligning means substantially parallel to the longitudinal axis of the shield to mate with the first aligning means on the head, said first and third aligning means positioned to align the shield in a storage position with a closed portion of the sleeve remote from the keyway covering the orifice of the head when the nozzle head is inserted into the shield through its said opening at one end thereof.

3,841,534

DISPENSING DEVICE FOR BULK GOODS

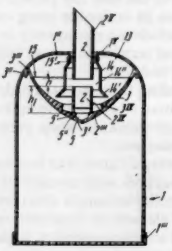
Rudiger Hirdes, 4630 Bochum, Tippelsberger Str. 42, Bochum, Germany

Filed July 6, 1973, Ser. No. 377,130

Claims priority, application Germany, July 6, 1972, 2233126

Int. Cl. G01f *11/34*

U.S. Cl. 222—457 **12 Claims**



1. A dispensing device for bulk goods such device comprising:

a. a closed container comprising a side wall, a top and a bottom, said top being formed so that the bulk goods flow toward the center thereof;

b. a first chamber formed within the container for receiving the bulk goods;

c. flow holes communicating between the first chamber and a second chamber formed by the remainder of the container;

d. a discharge pipe passing through the top of the container wherein one end of the discharge pipe is in the first chamber and the other end is on the exterior of the container; and,

e. trap chamber means comprising an open end, a wall and a closed tip wherein at least a portion of the wall is at an acute angle with respect to the axis of the trap chamber means, the trap chamber means forming the first chamber with the top of the container wherein the tip of the trap chamber means is positioned in line with the axis of the discharge pipe and wherein the flow holes are formed between the first and second chambers at the open end of the trap chamber.

3,841,535

VALVES FOR CONTROLLING THE FLOW OF FINELY-IVIDED MATERIAL FROM A HOPPER

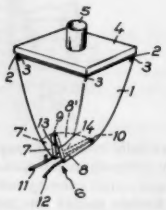
Jean-Paul Taupin, Le Vivier 58 - Urzy, France

Continuation of Ser. No. 44,687, June 9, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 312,107

Claims priority, application France, June 10, 1969, 69.19198

Int. Cl. B65d *47/20*

U.S. Cl. 222—502 **8 Claims**



1. A valve for controlling the flow of material from a flexible hopper comprising:

two flexible triangular shutter flaps which form extensions of the lower part of a hopper, said triangular flaps being substantially congruent, and two edges of each of said triangular flaps free to move toward and away from each other,

a framework associated with said flaps, said framework comprising a pair of elongate members, each one of said members respectively attached to one of said triangular flaps, each one of said elongate members having a plurality of arms, resilient foam sleeves on said arms, two of said arms having an included angle such that said arms and said included angle are substantially congruent with the free edges of a triangular flap and their included angle, said arms attached to said edges of said flaps by threading said arms in hems provided at said edges of said flaps so that upon bringing the arms together the edges of said flaps meet to prevent passage of material thereby, and the arms of said elongate members which are attached to said flaps are pivotally attached to each other at their ends,

and said elongate members having third arms comprising control means for varying the position of the shutter flaps.

3,841,536

ROTARY FLOW CONTROL VALVE FOR A COMBINE GRAIN BIN

Arved Maiste, and Melvin F. Robertson, both of Brantford, Ontario, Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Ontario, Canada

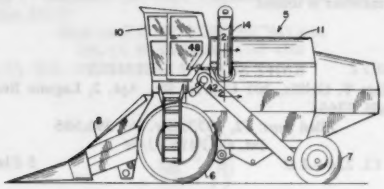
Filed Apr. 19, 1972, Ser. No. 245,377

Int. Cl. B65d *47/00*

U.S. Cl. 222—503 **1 Claim**

1. In a combine grain tank having an elongated generally horizontal, discharge auger housing at the bottom of a grain

discharge hopper with panels diverging upwardly from the opposing top edges of said housing and having an elongated auger shield in said hopper mounted over said discharge auger housing and the auger therein with the opposing bottom edges of said shield being spaced in parallel alignment substantially directly above and over said top edges of said housing so as to provide generally vertical elongated grain inlet openings into said housing, the improvement which comprises a rotary valve member for said grain inlet openings comprising, elongated strip members having a width and length approximately equal to the height and length of said grain inlet openings, support



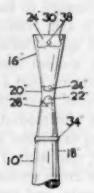
means for said strip members so that in the closed position of said valve member said strip members are approximately upright and substantially close off said elongated inlet openings, bearing means for said support means whereby said rotary valve member is rotatable about an axis extending between said grain inlet openings and generally parallel thereto, and means for turning said rotary valve member between its said closed position and an open position, said support means comprising a shaft mounted on said bearing means substantially directly above and parallel to said auger and said turning means comprising a crank arm secured to one end of said shaft.

3,841,537

CALKING CARTRIDGE NOZZLES

Charles M. Marg, 15 Greenhill Ln., Philadelphia, Pa. 19151, and Donald B. Marg, Mary Kay Ln., Glenview, Ill. 60025

Filed Aug. 24, 1973, Ser. No. 391,346
Int. Cl. B65d *41/46*
U.S. Cl. 222—541 **9 Claims**



1. In a calking cartridge nozzle of generally elongate, hollow configuration which has a longitudinal axis and which is attached at one end thereof to a calking cartridge, the combination of

A. a nozzle body of generally elongated configuration and having an outer periphery,
  1. said nozzle body defining a hollow interior channel,
  2. said nozzle body terminating upwardly in a severable end,
  3. nozzle body being provided with an annular, peripheral, outwardly projecting ring,

B. a solid neck integrally extending from the severable end,
  1. said solid neck upwardly closing the interior channel; and

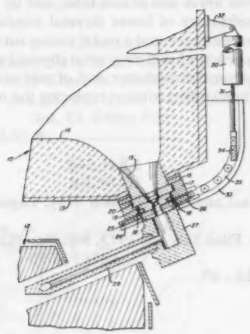
C. a severable tip integrally extending from the solid neck,
  1. said tip being fabricated of generally elongated conical configuration,
  2. said tip having an outer periphery defining an interior construction,
  3. said interior construction being formed of a size and shape to tightly overfit the periphery of the nozzle body when the tip is severed from the body at the severable end,
  4. said tip being severed from the nozzle body to expose the interior channel,
  5. the solid neck reclosing the interior channel after the tip is severed, rotated through one hundred and eighty degrees and reapplied over the nozzle body,
    a. the severable tip contacting the outwardly projecting ring for cartridge nozzle sealing purposes when the severed and rotated tip is reapplied over the nozzle body.

3,841,538

POSITIONING MECHANISM FOR LINEARLY SLIDABLE MEMBERS

Charles H. Bode, Jr., Bethel Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 300,945
Int. Cl. B22d *37/00*
U.S. Cl. 222—561 **3 Claims**



1. The combination, with a vessel which has an outlet in its bottom wall and a slidable member mounted on the bottom wall and adapted to move into and out of alignment with said outlet;

said slidable member including interconnected puller and pusher bars, a refractory cup between said bars, and a refractory pouring tube extending from a side wall of said cup at an angle inclined to the horizontal;

of an improved mechanism for positioning said member, said mechanism comprising:

a linear motion device;

means attaching said device to said vessel with the device extending in a direction approximately parallel with the side wall of said vessel; and

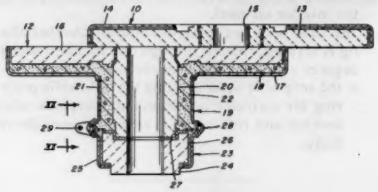
linkage means extending around the lower edge of said vessel and mechanically connecting said device and said member;

whereby up and down movement of said device moves said member in a direction which extends at an angle less than a straight angle to the direction of movement of said device, and whereby said device can raise or lower said pouring tube with respect to an inclined mold.

3,841,539
COLLECTOR NOZZLE FOR SLIDABLE GATES

Earl P. Shapland, Jr., Champaign, Ill., and James T. Shapland, Wilkins Township, Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa., by Earl P. Shapland

Filed Mar. 1, 1973, Ser. No. 337,251
Int. Cl. B22d 37/00
U.S. Cl. 222—561 7 Claims

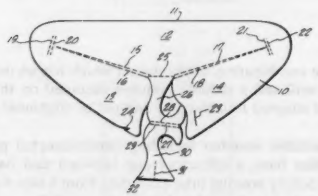


1. In a slidable gate which includes a refractory gate body having an opening, and a collector nozzle mounted integrally with said body and extending downwardly from said opening, said nozzle comprising a tube of refractory which has a relatively high thermal conductivity and which resists erosion during teeming of liquid metal, a metal casing surrounding said tube, and a layer of refractory cement between said tube and said casing, the improvement which comprises a short-length removable and replaceable tip and means attaching said tip to the lower end of said tube, said tip being formed of a ring of refractory of lower thermal conductivity than the refractory of said tube and a metal casing surrounding at least the upper portion of said ring, whereby said tip resists formation of bugs on the discharge end of said nozzle and can be replaced when eroded without replacing the remainder of said tube.

3,841,540
HANGER

Paul L. MacCone, 2801 Chillon Way, Laguna Beach, Calif. 92651

Filed July 30, 1973, Ser. No. 383,984
Int. Cl. A47j 51/096
U.S. Cl. 223—87 3 Claims



1. A clothes hanger of one-piece construction die cut from a flat sheet of stiff plastic, comprising: a substantially triangular member divided into a back panel, a front left panel and a front right panel, score lines dividing said front panels from said rear panel and being somewhat less than the entire length thereof such that when said member is folded slightly along the score lines the unscored portions serve to bias the front and rear panels apart;

one of said front panels having notch means and the other front panel having slot means, said notch and slot means being engageable to hold said member in a partially folded position presenting downwardly extending and outwardly biased front and rear panels when said member is folded;

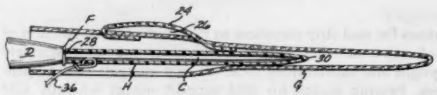
a first hook portion having a base and a curved end, the base of said first hook portion being integrally joined to said rear panel and extending between said front panels, said first hook portion being scored where the base thereof joins said rear panel; and

a second hook portion having a base and a curved end, the curved ends of each of said hook portions being integrally joined along a scored dividing line, said second hook portion having an enlarged base received between and retained by said left and right front panels when said member is folded.

3,841,541
KNIFE SHEATH ASSEMBLY

William T. Griffis, 201 Cypress Dr., Apt. 2, Laguna Beach, Calif. 92651

Filed Sept. 12, 1973, Ser. No. 396,505
Int. Cl. F41b 13/04
U.S. Cl. 224—2 D 5 Claims



1. A knife sheath assembly capable of being secured at a convenient position on the apparel of a user to removably hold a knife that includes a handle, an elongate blade having a longitudinal cutting edge and transverse projecting guard between said handle and blade in a position where said knife is completely enveloped in said assembly and will not be inadvertently dislodged therefrom by contact with foreign objects, but said knife capable of being retrieved from said assembly by an upward movement of a hand of said user, said knife sheath assembly comprising:

a. an inner confined space defining sheath that has a first closed end and a second open end, said inner sheath longer than said blade of said knife, said inner sheath of such transverse cross section that said blade in in frictional pressure contact with said inner sheath when disposed in said confined space, and said inner sheath formed from a resilient solid material that is sufficiently soft as to do no damage to said cutting edge when said blade is disposed in said confined space;

b. an outer confined space defining sheath that has a first closed end and a second open end, said outer sheath including a first portion that extends longitudinally from said open end thereof, said first portion and second portion meeting at an intermediately disposed junction, said first portion having said inner sheath slidably and snuggly supported therein, said second portion of such length and interior transverse cross section that said handle may be fully disposed therein, and said second portion having a longitudinal slot therein disposed between said junction and said second end;

c. first means for supporting said outer sheath from said apparel of said user with said first end of said outer sheath disposed below said second end thereof and substantially vertically aligned therewith said first means is a loop formed as a part of said outer sheath, which loop may be removably engaged by a belt that forms a part of the apparel of said user; and

d. second means secured to said inner sheath that extends through said slot and has an outer portion that may be grasped by a hand of said user, said second means when pulled upwardly moving said inner sheath and knife upwardly relative to said outer sheath to a position where said handle may be grasped by said user and said knife removed from said assembly, with said second means also

preventing said inner sheath inadvertently removed from said outer sheath, and said knife when being carried in said assembly having said guard thereof resting against the portion of said inner sheath defining said second open end thereof to prevent the free end of said blade contacting said first closed end of said inner sheath.

3,841,542
SKI CARRIER STRAP DEVICE

Philip C. Hogensen, Jr., 1924 Waystaff Dr., Salt Lake City, Utah 84117

Filed June 6, 1973, Ser. No. 367,446
Int. Cl. B65d *71/00*; **A45f** *4/00*
U.S. Cl. 224—5 Z **2 Claims**

1. A strap device convertible from a waist belt to a ski-carrier and vice versa, comprising a single strap continuous in length from one end to the other; a pair of mating buckle members with one buckle member thereof attached to one end portion of said strap; length adjustment slide means attached to said strap for sliding positional adjustment along the length thereof; means attaching the other end of said strap to said slide means to form a first loop of adjustable size; the second buckle member of said pair being positioned with said slide means, said slide means comprising a single length adjustment slide with which the second buckle member is positioned for movement therewith, and said one buckle member being adapted to releasably engage said second buckle member to form a second loop of adjustable size; and a third buckle member adapted to mate with said one buckle member and being slidably attached to said strap within the extent of the first loop for sliding movement thereon, said device being capable of use as a ski-carrier by forming one of said loops around a pair of skis, which are positioned together in parallel relationship as a unitary bundle, and to present the other loop as a handle for lifting and carrying the ski bundle, and said device being capable of use as a waist belt thereafter by disconnecting said one buckle member and said second buckle member and by engaging said one buckle member with said third buckle member.

3,841,543
INFANT CARRIER

Anita M. Bolton, 9840 N.W. Murlea Dr., Portland, Oreg. 97229

Filed Apr. 13, 1972, Ser. No. 243,738
Int. Cl. A61g *1/00*; **A45f** *3/02*
U.S. Cl. 224—6 **1 Claim**

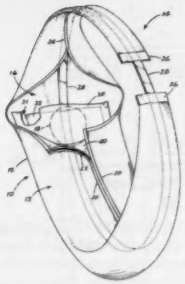
1. A unitary infant carrier comprising

an elongate, flexible sheet folded about its longitudinal axis to form an elongate, generally tubular body including an enclosure portion, and connected adjacent its opposite ends to form a closed loop,

means defining an opening into said body along the inner circumference of said loop adjacent one end of said enclosure portion,

means defining an infant-receiving pocket in said enclosure portion, exposed by said opening,

infant support means disposed adjacent said pocket and extending along said enclosure portion, comprising a resilient, semi-rigid pad,

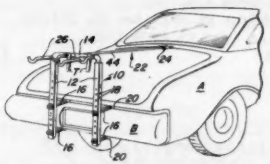


means defining another pocket adjoining said infant-receiving pocket and removably receiving said pad, and an elongate reinforcing band joined to said sheet along its longitudinal axis and extending circumferentially about said loop outwardly of said pockets and support pad.

3,841,544
BUMPER MOUNTED RACK

Irvin E. Berger, 4215 Grove St., Skokie, Ill. 60076

Filed Jan. 15, 1973, Ser. No. 323,868
Int. Cl. B60m *9/10*
U.S. Cl. 224—42.03 B **4 Claims**

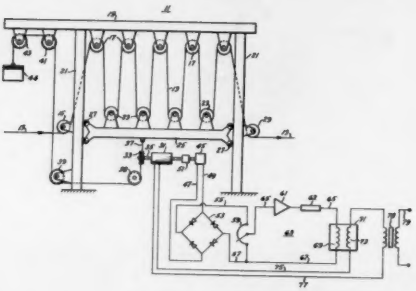


1. In a bumper-mounted rack of the type including a pair of spaced upright rack legs, a cross-brace means secured to and extending between said upright legs, and bumper-engaging brackets carried on elongated extensions supported by the rack legs and extending transversely of the plane of the upright legs and cross-brace means, the improvement comprising, in combination: at least one of the upright legs being secured to the cross-brace means through a pivotably adjustable connection that permits pivoting of the leg and the bumper-engaging brackets carried thereby about an axis in the plane defined by the legs and the cross-brace means, each bumper-engaging bracket being shaped to provide at least one apertured section, for securement of the bracket selectively longitudinally of the elongated extension supported by the rack leg, at least two differently shaped hook sections being provided on the bracket each adapted for engagement with the edge of a different shape of bumper, and each bumper-engaging bracket being shaped and arranged to provide two apertured sections and at least three differently shaped hook sections with one of the hook sections being located between the two apertured sections.

3,841,545
AUTOMATIC TRACKING CONTROL FOR LOOPING TOWER

George C. Gingher, Jr., Columbia, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 8, 1971, Ser. No. 113,217
Int. Cl. B65h 23/16
U.S. Cl. 226—1 23 Claims



1. A method of improving tracking of strip over the rolls of a looping tower by varying the tension in the strip as it passes through the looping tower comprising:

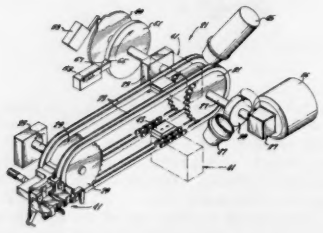
a. detecting the rate of change of any change in the amount of strip accumulated in the looping tower, and

b. altering the tension in the strip in the looping tower in proportion to the rate of change in the absolute amount of strip accumulated in the looping tower as the rate of change in the amount of strip accumulated in the looping tower is detected.

3,841,546
SOLDERING MACHINE

Stephen Ozimec, South Laguna, Calif., assignor to Comtec Economation, Santa Ana, Calif.

Filed Sept. 26, 1972, Ser. No. 292,398
Int. Cl. B23k 1/00
U.S. Cl. 228—6 31 Claims



1. A machine for attaching a wire member to a second member comprising:

a supporting structure;

an endless flexible element;

means for mounting said flexible element on said supporting structure for movement relative to said supporting structure in an endless path, said path passing through a first station and a bonding station;

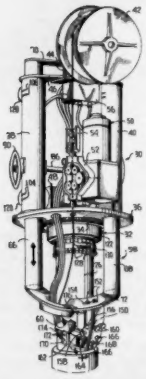
a head mounted on said endless flexible element for movement therewith along said path and through said stations; said head including a first set of jaws, said first set of jaws including a first jaw and a second jaw adapted to have the wire member therebetween, at least one of said first jaw and second jaw being movable toward and away from the other of said first and second jaws to facilitate loading of the wire member into said first set of jaws, said head including a second set of jaws for releasably holding the second member, and means for urging said members into close proximity at least when the head is at said bonding station; and

a heat source at said bonding station for providing heat for use in bonding said wire member and said second member together.

3,841,547
AUTOMATIC WELDING ASSEMBLY

John E. Bartley, Aptos, Calif., assignor to Zeta International Engineering, Inc., Santa Clara, Calif.

Filed Aug. 21, 1972, Ser. No. 282,026
Int. Cl. B23k 27/00
U.S. Cl. 228—29 7 Claims



1. A welding assembly adapted to be affixed to and supported on an end of a tubular member to be welded while effecting a circumferential weld therearound at a position disposed axially from said end thereof, comprising in combination:

support means adapted to receive and affix to said end of a tubular member;

a table surmounting said support means;

means interconnecting said table and said support means for rotatably mounting said table about a first axis substantially coincidental with the axis of the tubular member;

a pair of elongate support members fixed to said table radially outwardly of said first axis and extending parallel to said first axis;

an extensible carrier bar slidably received in each support member to project beyond said table alongside the tubular member;

a carrier foot interconnecting those ends of said carrier bars projecting beyond said table;

a carrier body mounted on said carrier foot about a tilting axis lying in a plane transverse to the tubular member;

a welding head support member mounted on said carrier body;

means for adjustably positioning said carrier body about said tilting axis;

a welding head fixed to said welding head support member; means supported from said table for feeding welding wire to said welding head;

means for selectively extending said carrier bars to position the welding head along the tubular member; and

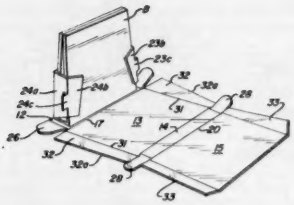
drive means carried by said table and reacting with said support means to rotate said table about its axis thereby to move said welding head circumferentially around the tubular member.

3,841,548

SHIPPING CONTAINER AND BLANK THEREFOR

William J. Curley, Marshalltown, Iowa, assignor to Packaging Corporation of America, Evanston, Ill.

Filed Sept. 13, 1972, Ser. No. 288,748
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **9 Claims**



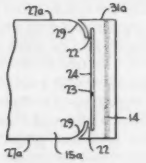
1. A shipping container for an article thicker at one edge than at a second edge opposite thereto, said container being formed from a single blank of foldable sheet material and comprising a bottom panel for subtending the back surface of the article; an inner top panel for at least partially overlying the front surface of the article; a first end panel for engaging the one edge of the article, said first end panel foldably interconnecting said inner top panel and said bottom panel, said inner top panel and said bottom panel extending convergently from said first end panel; a second end panel for engaging the second edge of the article, said second end panel being foldably connected to an edge of the bottom panel disposed opposite said first end panel; an outer top panel foldably connected to an edge of said second end panel disposed opposite said bottom panel, said outer top panel overlying and being secured to the entire surface of said inner top panel, the distance between the folding connections of said second end panel with said outer top panel and said bottom panel being less than the distance between the folding connections of said first end panel with said inner top panel and said bottom panel; side embracing panels foldably connected to opposite sides of said inner top panel and cooperating therewith for partially embracing the front, back and side surfaces of the article, each side embracing panel having a first section foldably connected to the inner top panel for engaging the adjacent side surface of the article, and a second section foldably connected to said first section for engaging the back surface of the article and being sandwiched between said bottom panel and the article back surface, the folding connection between said first and second sections being interrupted by a tab struck out from said first section and extending angularly outwardly from said first section when said sections are engaging the side and back surfaces of the article; tuck flaps foldably connected to opposite ends of said first and second end panels and adapted to be outwardly disposed relative to the side surfaces of the article; first closure flaps foldably connected to said outer top panel and outwardly disposed relative to the folded tuck flaps; and second closure flaps foldably connected to said bottom panel, corresponding closure flaps being secured to one another in overlapping relation whereby the overlapped closure flap is in abutting engagement with the outwardly protruding end of the struck-out tab and retained thereby in a predetermined folded position.

3,841,549

MANIFOLD ENVELOPE ASSEMBLY

William R. Wakeman, Ransomville, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,824
Int. Cl. B65d *27/10*
U.S. Cl. 229—69 **1 Claim**



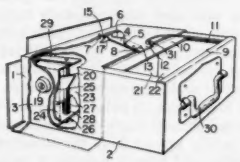
1. A manifolding assembly, comprising a plurality of envelopes series-connected and separable along transverse lines of weakening provided thereon, each envelope comprising front and back panels with insert material within each envelope, means securing said panels together to form an envelope pocket for said insert material, means for opening the envelope pocket, said insert material including at least one insert sheet connected at one marginal edge thereof to said panels, a first elongated, closed slot provided in said sheet thereby defining said one marginal edge, second slots spaced slightly inwardly of and closely adjacent said first slot, said second slots each slightly overlapping the opposite ends of said first slot and each opening into marginal edges of said sheet lying adjacent said one marginal edge, said second slots curving inwardly toward said first slot from said marginal edges and terminating closely adjacent said first slot, whereby the spacings between each said second slot and said first slot define connecting ties gradually decreasing in width from the ends of said first slot toward the closed ends of said second slots, said ties lying parallel to the direction of envelope extraction through said opening means, whereby said ties are capable of flexing before being gradually broken at said closed ends of said second slots during envelope extraction to free said insert sheet from said envelope, said second slots defining rounded corners at said one marginal edge of said sheet upon extraction thereof.

3,841,550

THEFTPROOF COIN RECEPTACLE FOR COIN-OPERATED APPARATUS

Tadayoshi Kaneda, and Mitsuaki Tanaka, both of Himeji, Japan, assignors to Glory Kogy Kabushiki Kaisha, Hyogoken, Japan

Filed Nov. 6, 1972, Ser. No. 303,719
Claims priority, application Japan, Nov. 5, 1971, 46-103103 Japan, Nov. 5, 1971, 46-103105
Int. Cl. G07b *15/00*
U.S. Cl. 232—15 **5 Claims**



1. A coin receptacle to be removably inserted into a hollow space in a coin-operated apparatus for collecting coins dropped thereinto, comprising a substantially boxlike casing,

an opening formed through part of the upper surface of said casing for admitting coins therethrough into said casing, a lid for opening and closing said opening, lid-closing means for automatically closing said opening by said lid when said casing is drawn out of said hollow space, a first lock mechanism for locking said casing in position within said hollow space, and a second lock mechanism for automatically locking said lid when said casing is drawn out of said hollow space, said lid-closing means comprising a lever turnably mounted on the upper wall of said hollow space, a first projection on the upper surface of said lid cooperative with a first edge of said lever for closing said opening by said lid when said casing is drawn out of said hollow space, a second projection on the upper surface of said casing cooperative with a second edge of said lever for causing said lever to turn upon complete closure of said opening to a first position where said first edge thereof becomes uncooperative with said first projection, and lever-turning means operated when said casing has been inserted into said hollow space for causing said lever to turn to a second position where said first edge thereof is ready for cooperation with said first projection.

3,841,551

THERMO-OPERATION TYPE TRANSFER VALVE

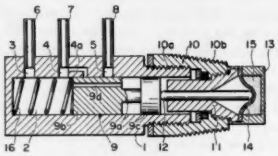
Nobuyoshi Ota, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 15, 1972, Ser. No. 289,613

Claims priority, application Japan, Sept. 28, 1971, 46-88370

Int. Cl. G05d *23/02;* **F16k** *3/26*

U.S. Cl. 236—86 **7 Claims**



1. A thermo-operation type transfer valve comprising a casing defining therein a valve passage extending axially of said casing, a cover means closing an end of said casing and adapted to be disposed in heat conductive relationship to a material the temperature of which is to be detected, a single diaphragm disposed axially inwardly of said cover means and extending generally transversely of the axis of said casing for defining with said cover means a single, closed, variable volume chamber, a thermally expansive element which expands as the temperature of the material to be detected rises, said thermally expansive element being contained in said single chamber and including two kinds of waxes having different melting points, a valve member disposed in said valve passage for axial movement by the thermal expansion of said thermally expansive element, said valve passage being provided with a fluid outlet passage and two fluid inlet passages, said outlet passage and said inlet passages each being formed in the peripheral wall of said casing and each being spaced axially from one another, said valve member being provided with a through-hole extending from one end thereof to a portion of the periphery of said valve member between the ends thereof, one of said inlet passages being provided with a branch passage connected thereto which opens into said valve passage at a location axially spaced from the location where the inlet passage having said branch passage is opened to said valve passage, said location being spaced from said outlet passage by at least the length of said through-hole, wherein said outlet passage is communicated with only one of said inlet passages at a temperature lower than a predetermined lower temperature, said outlet passage is communicated with only the other of said inlet passages at a temperature higher than said predetermined lower temperature and lower than a predetermined higher temperature and said outlet passage is communicated with only said one inlet passage at a temperature higher than said predetermined higher temperature.

3,841,552

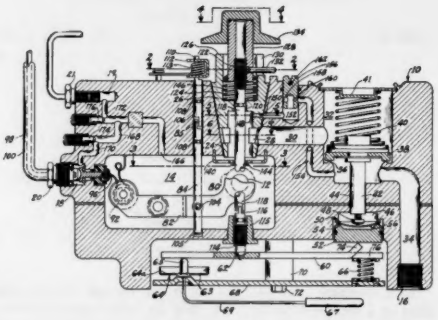
MANIFOLD VALVE FOR DOMESTIC GAS OVENS

Howard R. Kinsella, and Carl A. Smith, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 8, 1973, Ser. No. 322,114

Int. Cl. F23n *1/00*

U.S. Cl. 236—99 **2 Claims**



1. A fuel flow control device for oven gas burners comprising a body member having an inlet, a main burner outlet, a pilot burner outlet, a thermoelectric safety valve controlling said inlet, a pilot fuel passageway connecting said inlet with said pilot burner outlet, a main fuel passageway connecting said inlet with said main burner outlet, and an auxiliary passageway connecting said inlet with said main burner outlet, a manual rotary valve between said inlet and said main burner outlet controlling said main and auxiliary fuel passageways, said rotary valve having a main port and an auxiliary port, said rotary valve ports being arranged so that when said rotary valve is rotated to one position flow through both main and auxiliary fuel passageways is cut off, and when said rotary valve is rotated in one direction from said one position through a predetermined range fuel is permitted to flow through said main passageway only, and when said rotary valve is rotated further in the same direction to a position beyond said predetermined range fuel is permitted to flow through both said main and auxiliary fuel passages, a snap-action on and off valve in said main fuel passageway between said rotary valve and said main burner outlet controlling flow through only said main burner passageway, adjustable thermostatic means operatively connected to said snap-action valve, and means rotating with said rotary valve and operative to adjust said thermostatic means.

3,841,553

VACUUM CLEANING UNIT FOR VEHICLES

Alexander R. Taylor, N. Burnaby, British Columbia, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

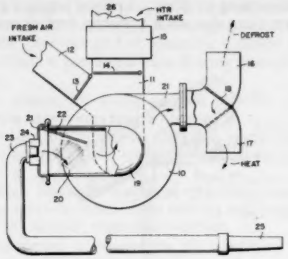
Filed Apr. 2, 1973, Ser. No. 347,138

Int. Cl. B60h *1/02*

U.S. Cl. 237—12.3 R **2 Claims**

1. A combined air heating and air cleaning apparatus for use in vehicles, comprising a blower for drawing air in through either a fresh air intake, a heater intake, or a suction cleaning

apparatus intake, said blower expelling the air through either a defrost outlet or a heater outlet in the vehicle, with a dust



collection bag mounted in the cleaning intake line together with means to attach a cleaning hose to the cleaning intake line.

3,841,554

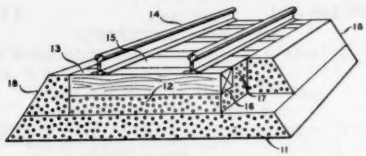
STABILIZED RAILWAY BED AND METHOD OF CONSTRUCTION

Richard J. Bennett, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 249,775, May 3, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 404,917

Int. Cl. E01b *1/00*

U.S. Cl. 238—2 **8 Claims**



1. A method for stabilizing a railway road bed comprising:

a. laying a base section of particulate matter of sufficient width and depth to support the weight of railway rolling stock;

b. consolidating the base section with an emulsion comprising a thermoplastic elastomer, a resinous material and a polar solvent;

c. placing a layer of loose ballast on the base section;

d. laying ties on the loose ballast;

e. laying track on the ties;

f. placing loose ballast, as a crib, between the ties beneath the rails;

g. placing loose particulate matter above the base section at the ends of the ties to produce a curb of height and width sufficient to retain the crib; and

h. consolidating at least a part of the curb with said emulsion.

3,841,555

SPRAY APPARATUS AND METHOD

Duane F. Lilja, 2410 Central Ave., N.E., Minneapolis, Minn. 55413

Continuation-in-part of Ser. No. 280,476, Aug. 14, 1972, Pat. No. 3,780,943. This application Nov. 8, 1973, Ser. No. 413,768

Int. Cl. A01g *25/02*

U.S. Cl. 239—8 **24 Claims**

1. An apparatus for the spraying of a spray product to obtain a fine particulate spray at low pressure comprising:

a closed reservoir to contain the spray product;

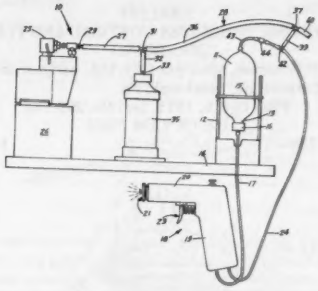
a main air line adapted to receive a supply of air under low pressure from an air supply means;

spray applicator means operable to concurrently discharge air and a spray product in a fine particulate spray;

said main air line connected directly to the spray applicator means to supply air under low pressure to the spray applicator means;

an air pressure supply branch disposed between the main air line and the reservoir to supply air under pressure to the reservoir;

a one-way air valve disposed in said air passage supply branch orientated to allow the free passage of air from the



main air line into the reservoir and restrict passage of air from the reservoir to the main air line;

a product line disposed between the reservoir and the spray applicator means to deliver spray product to the spray applicator means;

said spray applicator means having sequential valving means and actuator means to actuate the sequential valving means;

said sequential valving means operable to initiate flow of air before flow of spray product upon commencement of spraying, and terminate the flow of spray product before termination of the flow of air upon completion of spraying.

3,841,556

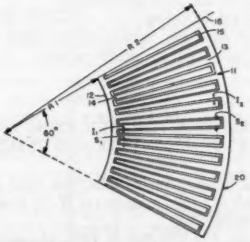
ROADBED ON WHICH ELECTRICALLY POWERED VEHICLES CAN BE OPERATED

Robert J. Reynolds, 1543 Pine Valley, Ann Arbor, Mich. 48104, and Herman F. Deyerl, P.O. Box 3721, Santa Monica, Calif. 90403

Division of Ser. No. 184,105, Sept. 27, 1971, Pat. No. 3,736,484. This application Feb. 14, 1973, Ser. No. 332,309

Int. Cl. A63h *18/12*

U.S. Cl. 238—10 E **3 Claims**



1. A track defining a roadbed and having continuous conductors arranged to define spaced, transverse conducting segments of alternate opposite polarity and strips of insulating material positioned between said conducting segments, said conducting segments being adapted to receive superimposed

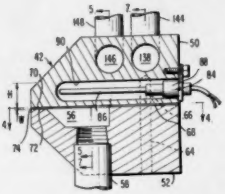
alternating and direct current signals from an external controller means, said track including a plurality of interchangeable sections mechanically and electrically engaged to form a closed roadbed configuration, the opposite ends of each section having complementary construction so that the one end of any section can be connected to the other end of any other section without interrupting the electrical continuity of said conductors, said one end of each section terminating along the edge of one transverse conductor segment and said other end of each section terminating along the edge of said insulating material that is positioned against the other transverse conducting segment.

3,841,557

COATING THICKNESS CONTROL AND FLUID HANDLING

Edward S. Atkinson, Michigan City, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1972, Ser. No. 295,740
Int. Cl. F23d *15/00*
U.S. Cl. 239—11 **13 Claims**



1. Coating control apparatus, comprising

elongated nozzle means for projecting a gaseous barrier against a coated surface of a continuous substrate to wipe excess molten coating material from the continuous substrate to control the thickness of molten coating on the surface of the continuous substrate,

the nozzle means including walls defining linearly extended gas outlet means for projecting gas from the nozzle means,

the gas outlet means having length in a direction along the nozzle means,

the gas outlet means having width in a direction transverse to the length and transverse to the direction of projection of gas from the nozzle means,

heating means contiguous to the gas outlet means for controlling the width of the gas outlet means by thermally expanding at least a portion of the walls of the gas outlet means, and

control means for the heating means,

the control means including

means for operating the heating means from a location spaced remotely from the nozzle means.

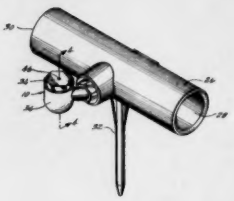
3,841,558

ARRANGEMENT FOR IRRIGATING AND CONTROLLING TEMPERATURE AND HUMIDITY OF PLANTS

William Douglas Fowler, Terra Bella, and Paul Brookman, Porterville, both of Calif., assignors to W. D. Fowler & Sons Corp., Terra Bella, Calif.

Division of Ser. No. 196,978, Nov. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 173,154, Aug. 19, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,317
Int. Cl. B05b *17/04*
U.S. Cl. 239—11 **5 Claims**

1. The method of selectively irrigating and controlling the temperature and humidity of plants through a water irrigation system for supplying water to orifices adjacent each plant from a water pressure control means coupled to a water supply, the water irrigation system containing a multiplicity of intercommunicating orifices comprising supplying water at a low pressure from the water pressure control means to the



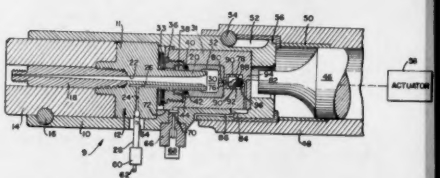
multiplicity of intercommunicating orifices of the irrigation system to the plants in a small stream to irrigate the plants, and alternatively supplying water at a high pressure to the multiplicity of intercommunicating orifices of the irrigation system to produce fine sprays of water adjacent the plants for temperature and humidity control.

3,841,559

APPARATUS FOR FORMING HIGH PRESSURE PULSED JETS OF LIQUID

James Michael Hall, Annapolis, Md., and Louis L. Clipp, McLean, Va., assignors to Exotech, Incorporated, Gaithersburg, Md.

Filed Oct. 18, 1973, Ser. No. 407,496
Int. Cl. B05b *3/14*
U.S. Cl. 239—101 **4 Claims**



1. Apparatus for forming pulsed jets of liquid comprising:

a nozzle block having a fluid discharge passageway therethrough;

a pressure cylinder cooperating with said nozzle block to define a compressible chamber in fluid communication with said nozzle block discharge passageway, said pressure cylinder being capable of assuming a middle, latched position relative to said nozzle block, a second, expanded position in which said compressible chamber is in an enlarged condition and a third, compressed position relative to said nozzle block in which said compressible chamber is in a compressed condition;

one of said nozzle block and said pressure cylinder having a fluid inlet passageway therethrough communicating with said compressible chamber;

bias means for urging said pressure cylinder to assume the second, expanded position;

latch means capable of assuming a latching condition in which said latch means cooperates with said pressure cylinder to retain said pressure cylinder in the middle, latched position and of assuming a non-latching condition in which said pressure cylinder is free to assume the second, expanded position under the urging of said bias means;

valve means connected to said fluid inlet pasageway and adapted for connection to a liquid source, said valve means capable of assuming a fill conditon in which liquid is permitted to flow from the liquid source through said valve means and said fluid inlet passageway to said compressible chamber and of assuming a closed position in which liquid is prevented from flowing through said valve means;

impelling means for acting on said pressure cylinder to compress said compressible chamber;

control means for controlling operation of said latch means, said valve means and said impelling means to cause in sequence:

a. said latch means to assume the latching condition preventing said bias means from moving said pressure cylinder to the second, expanded position,

said valve means to assume the fill condition, permitting liquid from the liquid source to pass through said valve means and said fluid inlet passageway to said compressible chamber;

b. said latch means to assume the non-latching condition, permitting said bias means to move said pressure cylinder to the second, expanded position,

said valve means to assume the closed condition, preventing liquid flow through said valve means;

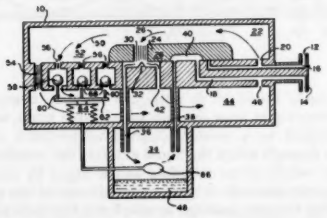
c. actuation of said impelling means to move said pressure cylinder to the third compressed position while compressing said compressible chamber and expelling liquid from said compressible chamber out said fluid discharge passageway as a pulsed liquid jet and to cause said latch means to be released from non-latching position, thereby permitting said latch means to assume the latching condition and retain said pressure cylinder in the middle, latched position.

3,841,560

ANESTHETIC VAPORIZER

Ulrich Sielaff, McFarland, Wis., assignor to Airco, Inc., New York, N.Y.

Filed July 16, 1973, Ser. No. 379,506
Int. Cl. B05b *1/24;* **B44d** *3/42*
U.S. Cl. 239—136 **8 Claims**



1. An anesthetic vaporizer apparatus, comprising in combination:

a vaporizer housing having a main gas inlet and a main gas-vapor outlet,

a bypass passageway communicating between said gas inlet and said gas outlet,

a vaporizing chamber in said housing for containing liquid anesthetic and adapted to saturate gas passing through said vaporizing chamber with anesthetic vapor,

vaporizing passage means adapted to direct a portion of gas from said main inlet through said vaporizing chamber to said outlet,

thermal bypass passageway communicating between said gas inlet and said gas outlet and adapted to control the flow of gas through said thermal bypass passageway in accordance with the temperature within said vaporizing chamber,

linear flow restrictors in each of said vaporizing passage means and thermal bypass passageway,

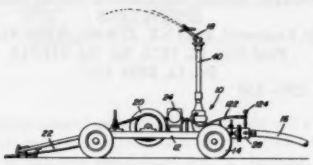
said linear flow restrictors comprising a plurality of minute capillary passages adapted to maintain a linear relationship between the gas flow and pressure drop across said flow restrictors.

3,841,561

CONTROLLABLE WATER TURBINE MOTOR FOR IRRIGATION MACHINE

Edward H. Lacey, Box 796, Trent, S. Dak. 57065

Filed Aug. 31, 1973, Ser. No. 393,612
Int. Cl. B05b *3/00*
U.S. Cl. 239—189 **10 Claims**



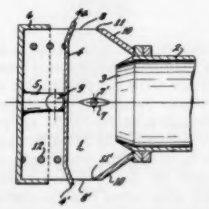
1. In a self-propelled irrigation machine having a pressured water inlet and a discharge means, that improvement comprising a water powered turbine assembly incorporated into the flow path between the water inlet and discharge means for powering the machine, said turbine assembly including a tubular housing defining the flow path from the inlet to the discharge means, a shaft rotatably disposed in the housing and including one end extending outwardly of the housing for powering the machine, turbine means fixed to the shaft for rotating the shaft in response to axial flow of water in the flow path, and means controlling the axial flow of water in relation to the turbine means thereby controlling the output of said shaft and enabling said shaft to be driven at a substantially constant speed by utilizing only a portion of the power capable of being produced by maximum water flow thereby enabling constant output of the shaft even if water flow is reduced, said means controlng water flow including means within said housing enabling a controlled portion of the water in the flow path to flow radially outwardly of the periphery of the turbine means and then axially in the housing.

3,841,562

VARIABLE NOZZLE FOR POSITION CONTROL

Reinhard Behnert, Osterhagen-Ihlpohl, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed Nov. 8, 1973, Ser. No. 414,157
Claims priority, application Germany, Nov. 17, 1972, 2256438
Int. Cl. B64c *9/38, 15/06*
U.S. Cl. 239—265.29 **9 Claims**



1. Control nozzle with variable opening comprising:

first means defining a nozzle chamber and having at least one opening in a first particular plane;

a pressure pipe disposed for feeding a pressurized medium into the nozzle chamber and having an end opening in a second plane extending at an angle to the first plane;

a deflection plate pivotally mounted in said chamber and having an edge extending to said opening of the nozzle chamber, said edge determining the effective area of said nozzle opening for flow from said pipe and through the effective area, said deflection plate pivoting on an axis which extends transverse to said pipe; and

second means for determining the deflective position of said plate.

3,841,563

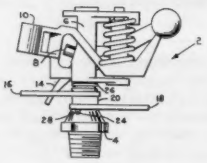
AUTOMATIC RESET REVERSING MECHANISM FOR SPRINKLERS

George H. Lockwood, 2125 N.E. 27th Dr., Wilton Manors, Fla.

Filed Nov. 12, 1973, Ser. No. 415,015

Int. Cl. B05b *3/02*

U.S. Cl. 239—230 **5 Claims**



1. An adjustable path repetitive reversing sprinkler including a movable nozzle for distributing fluid and a drive means, wherein the improvement of the adjustable path repetitive reversing sprinkler comprises:

a memory device connected to said sprinkler allowing said nozzle to move outside of a preset repetitive adjustable path, said memory device including means to return and re-establish the sprinkler movement in said preset sprinkler nozzle path.

3,841,564

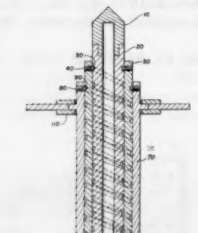
BARREL CLEANING APPARATUS

Robert C. Farrington, Saint Paul, Minn., assignor to Timeline Inc., St. Paul, Minn.

Filed Apr. 25, 1973, Ser. No. 354,245

Int. Cl. B05b *15/06*

U.S. Cl. 239—281 **3 Claims**



1. In a device for cleaning the interior surface of an enclosed vessel having a small orifice including means for supplying fluid under pressure, a hose connected at one end to said means to carry fluid therefrom, a nozzle connected to the other end of said hose to receive fluid therefrom and deliver the fluid in a plurality of spatially separated streams of fluid and probe means to retractably advance said nozzle into the vessel through the orifice and direct streams against the interior surface of the enclosed vessel wherein said probe means comprises:

an inner cylindrical shell connected at one end to said hose and at the other end to said nozzle, said inner cylindrical shell having a spiral groove inscribed on its outer surface; an outer cylindrical shell, coaxial with an enclosing said inner cylindrical shell, said outer cylindrical shell slidably coupled to said inner cylindrical shell by projections from its inner surface which ride in the spiral grooves inscribed on the outer surface of said inner cylindrical shell; and

means rotating said outer cylindrical shell about its axis thereby said inner cylindrical shell to be advanced axially because of the cooperative screw action between the projections on said outer cylindrical shell and the spiral groove inscribed on the outer surface of said inner cylindrical shell.

3,841,565

INJECTORS FOR INJECTING A LIQUID, IN PARTICULAR A FUEL, INTO A HIGH TEMPERATURE SPACE SUCH AS A COMBUSTION CHAMBER

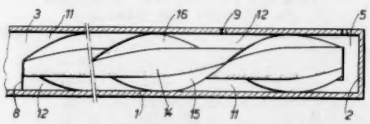
Marc Francois Bernard Buisson, Le Mee-sur-Seine; Claude Desire Foure, Courbevoie; Armand Jean-Baptiste LaCroix, Itteville; Herve Alain Quillevere, Issy-les-Moulineaux, and Gilbert James Rousseau, Brie-comte-Robert, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed July 20, 1973, Ser. No. 380,979

Claims priority, application France, July 21, 1972, 72.26409

Int. Cl. B05b *1/14*

U.S. Cl. 239—488 **9 Claims**



1. A liquid manifold, in particular for fuel, comprising a tube containing at least one row of injection ports, said tube being divided by a twisted longitudinal partition into two passages through which the liquid entering the manifold flows along the whole of the manifold and is urged by centrifugal force against the wall of said manifold, one of the passages comprising a supply passage in which the liquid flows in one direction and the other a return passage in which the liquid flows in the opposite direction, said return passage communicating with at least some of the injection ports.

3,841,566

DISTRIBUTION OF FLUIDS FROM PIPES

Ernest Wilford, Bingley, England, assignor to Associated Weavers Limited, Bradford, Yorkshire, England

Filed July 16, 1973, Ser. No. 379,630

Claims priority, application Great Britain, July 19, 1972, 33846/72

Int. Cl. B05b *1/04*

U.S. Cl. 239—568 **6 Claims**

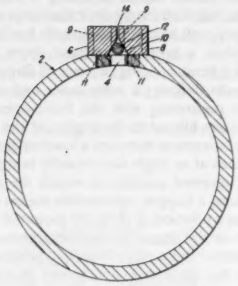
1. A fluid nozzle structure of extended length particularly adapted to extend across the width of an endless web, said fluid nozzle structure comprising

a head having a fluid discharge slot formed therein from one end to the other,

structure defining a bore on the interior of said head, said bore extending the length of said slot and communicating throughout its length with said slot,

a shaft located within said bore and extending from one end thereof to the other,

screw threads on said shaft from one end to the other of said shaft, said shaft being disposed within said bore such that



the crests of said threads contact the surface of said bore on each side of said slot adjacent said discharge slot, thereby providing said fluid discharge nozzle with a multiplicity of outlets along the nozzle's extended length so as to permit a substantially uniform fluid discharge along that extended length.

3,841,567

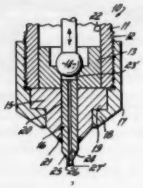
EXTRUSION NOZZLE

Julius S. Drozek, Lorain; Richard A. Horvath, and Burton J. Vilagi, both of Amherst, all of Ohio, assignors to Mardson Corporation, Amherst, Ohio

Filed July 23, 1973, Ser. No. 381,766

Int. Cl. B05b *1/30*

U.S. Cl. 239—570 **14 Claims**



1. An extrusion nozzle assembly for extruding viscous liquid material at a pressure of at least 2,000 pounds per square inch, said nozzle assembly being adapted to be removably secured to the end of a fluid dispenser, said nozzle assembly including a valve element and a valve seat, said valve element being disposed in said dispenser and operatively cooperable with said valve seat to control the flow of material through said nozzle assembly,

a nozzle tip mounted below said valve seat and having a through passage, said passage being in fluid communication at one end with said valve seat, said nozzle passage terminating at the end opposite said one end in an outlet orifice,

a minimum volume cavity adjacent to said valve element and said valve seat of no greater than approximately 0.47 $\times 10^{-4}$ in^3, and

said opposite end of said passage being surrounded by an externally tapered surface of said nozzle tip which cooperates with said orifice to form a minimal end lip area of no greater than approximately 27.7 $\times 10^{-5}$ in^2.

3,841,568

STREAMLINED FLOW IN FLUIDS

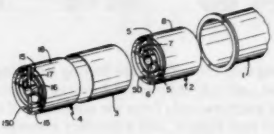
Bernard Henry Broad, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwell, England

Filed Feb. 7, 1973, Ser. No. 330,399

Claims priority, application Great Britain, Feb. 7, 1972, 5659/72

Int. Cl. B05b *1/02*

U.S. Cl. 239—590 **17 Claims**



1. A high-pressure hose comprising a nozzle and a conduit and wherein there is interposed in a fluid flow path within the conduit, for inducing streamlined flow in the fluid, a baffle including a peripheral cylindrical tube to which there is secured by at least one radial support at least one rigid element which extends generally parallel to the direction of the flow path and which in section perpendicular to the flow path is concavely curved relative to the central axis of the conduit, the baffle affording when viewed in axial planes from the central axis of the conduit at least three flow paths separated from each other in a radial direction by the baffle, and which further includes at each axial end thereof an individual cylindrical tube of relatively small diameter located about the central axis of the baffle, said individual cylindrical tubes being spaced apart from one another.

3,841,569

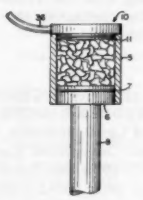
SEPARATING MEAT FROM BONES

John Nicol Engelhardt, Davenport, and Roy Settle Rousseau, Bettendorf, both of Iowa, assignors to The Kartridg Pak Co., Davenport, Iowa

Filed Nov. 20, 1972, Ser. No. 307,959

Int. Cl. B02c *19/12*

U.S. Cl. 241—4 **7 Claims**

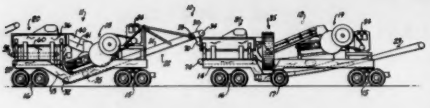


1. The method of separating attached meat from a mass of bone pieces or small bones which comprises, compressing said mass in a means providing a chamber essentially in a single direction to a substantially reduced volume, collecting the meat which extrudes from said mass through a means provided with a foraminous surface during said compression and removing the resultant press cake the meat content of which has been substantially reduced, only the bone pieces or small bones at the surface of said press cake proximate to said foraminous surface having direct engagement with said foraminous surface and with said engagement being essentially normal to said foraminous surface without substantial working action against said surface.

3,841,570
CRUSHING PLANT

John N. Quinn, 3979 S. Plymouth Cir., Madison, Wis. 53704

Filed Dec. 21, 1972, Ser. No. 317,151
Int. Cl. B02c 21/02; B07b 1/28
U.S. Cl. 241—78 30 Claims



1. An elongated crushing plant having crushing means located at front and rear stations, rear conveyor means extending upwardly and forwardly from the underside of the crushing means at said rear station, and a delivery conveyor extending forwardly and upwardly from the underside of the crushing means at said front station, characterized by:

A. the crushing means at the rear station comprising primary and secondary crushers;

B. a material receiving and classifying unit located between said stations and having means thereon for producing a plurality of outputs each consisting of graded material differing in size from the others;

C. said rear conveyor means conducting crushed material from said rear crushing station to said material receiving and classifying unit and comprising first and second conveyors having rear portions disposed to receive crushed materials issuing from said primary and secondary crushers, respectively;

D. means for conducting output material of finish grade from said material receiving and classifying unit to said delivery conveyor;

E. means comprising a conveyor member for conducting output material of a grade larger than finish grade from the receiving and classifying unit to the crushing means at said front station;

F. an elevator to receive materials at a low level inlet and to discharge the same onto said conveyor member from a high level zone;

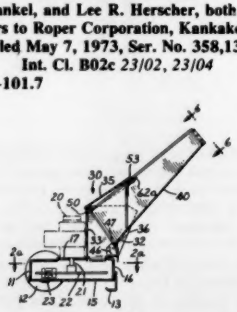
G. means for directing output material of a grade intermediate said larger and finish grades to said low level inlet of the elevator;

H. and means for screening out larger than finish grade material discharging from the crushing means at said front station and for conducting the same into the low level inlet of the elevator.

3,841,571
SAFETY GUARD ARRANGEMENT FOR SHREDDER-BAGGER

Douglas D. Dankel, and Lee R. Herscher, both of Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed May 7, 1973, Ser. No. 358,130
Int. Cl. B02c 23/02, 23/04
U.S. Cl. 241—101.7 11 Claims

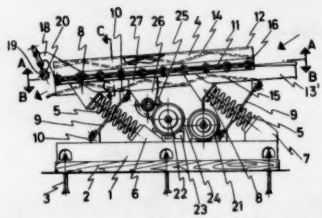


1. In a shredding and bagging machine for yard usage, the combination comprising a frame having a bottom wall, circular side wall and top wall defining a shredding chamber, transport means for supporting the frame in horizontal position slightly upraised above the ground, an engine mounted on the top wall and having a drive shaft which extends into the chamber, a blade mounted on the shaft having tip portions extending to the region of the side wall, a plurality of stationary breaker members at spaced positions on the side wall and having notches formed therein for registering with the tip portions of the blade, means including a discharge conduit penetrating the side wall for forcible discharge of the shredded material, the top wall having a receptacle for feeding material into the chamber, a housing arranged above the receptacle and providing a front opening, a ramp of flaring construction having side walls defining a wide outer end and a relatively narrow throat registering with the front opening, the ramp being horizontally hinged in the region of the throat for pivoted swinging movement between a lowered position in which the ramp extends at an angle downwardly into ground engagement and an upraised position in which the ramp is angled upwardly to form a hopper, releaseable means for holding the ramp is upraised position, a pivotally mounted guard member extending across the throat of the ramp, means for swinging the guard member to an out-of-the-way position, clear of the throat, when the ramp is lowered, and means actuated by raising of the ramp for causing the guard member to move into throat-obstructing position to prevent ejection of missiles through the receptacle from the blade.

3,841,572
A DEVICE FOR BREAKING UP COMPRESSED MATERIAL PACKED IN A SACK

Gines Gascon Cordoba, Velazquez 157, Madrid, Spain

Filed Dec. 29, 1972, Ser. No. 319,704
Claims priority, application Spain, Aug. 31, 1972, 183589
Int. Cl. B02c 19/16
U.S. Cl. 241—202 6 Claims



1. A device for breaking up by vibration impact compressed material packed in a sack, said device comprising:

a base mountable on a foundation;

a vibrating tunnel assembly having an inlet and an outlet;

a plurality of supporting means including pairs of coil springs and leaf springs for resiliently supporting said vibrating tunnel assembly above said base in an inclined manner with said outlet lower than said inlet;

vibrating means mounted on said base and connected to said vibrating tunnel assembly for imparting a vibrating motion thereto; and

said vibrating tunnel assembly comprising:

an upper tunnel forming member having a first longitudinal length and a U-shaped concave transverse cross-section;

a lower tunnel forming member having a second longitudinal length greater than said first longitudinal length and a U-shaped concave transverse cross-section;

said upper and lower members being joined with the concavities thereof confronting each other;

a roller freely rotatably positioned adjacent said outlet; and

means attached to said upper member for mounting said roller.

3,841,573

GRINDING APPARATUS FOR FIBROUS MATERIAL

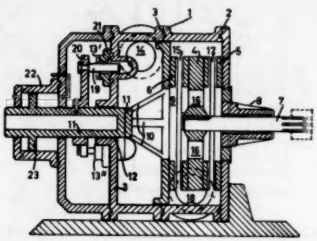
Albrecht Kahmann, Weingarten, Germany, assignor to Escher Wyss G.m.b.H., Ravensburg, Germany

Filed Sept. 14, 1972, Ser. No. 288,944

Claims priority, application Germany, Sept. 17, 1971, 2146547

Int. Cl. B02c *7/06, 7/14*

U.S. Cl. 241—245 **3 Claims**



1. A grinding device including a housing having two end covers and containing a stator disc which is provided with a central opening and which, with an adjacent one of said end covers, bounds a space which is charged with stock during operation of the grinding device, the stator disc being movable axially relatively to a rotor disc with which it defines a grinding gap and being connected with a cylindrical part which is coaxial with that disc and the housing and projects from the latter through a central opening in said adjacent end cover and is sealed relatively thereto; a servomotor connected to the cylindrical part and serving to effect axial movement of the stator disc; and guideway means, including cooperating elements connected; respectively with the stator disc and the housing, for guiding said stator disc for said axial movement; and characterized in that there are a plurality of said guideway means which are distributed equiangularly about the axis of the cylindrical part and which are situated outside said space charged with stock, whereby clogging of the guideway means by the stock is precluded.

3,841,574

WINDING DEVICE FOR SYNTHETIC THREADS

Erich Lenk; Hansjochen Busch, both of Remscheid, and Manfred Greb, Huckeswagen, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

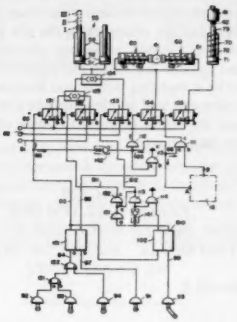
Filed Aug. 26, 1971, Ser. No. 175,227

Claims priority, application Germany, Sept. 1, 1970, 2043246

Int. Cl. B65h *54/20, 54/44*

U.S. Cl. 242—18 DD **14 Claims**

1. A winding head for the continuous winding at high velocity of freshly spun or stretched, synthetic polymer filaments onto a bobbin, which comprises rotatable chuck means having bobbin-gripping means for releasably gripping a bobbin, a drive roller for rotatably driving said bobbin and the winding thereon, bobbin drive-actuating means for bringing said drive roller and said bobbin into driving contact, releasable braking means for braking said chuck means, respective pneumatic means for operating each of the aforementioned means, and pneumatic control means having pneumatically-operated members which are (A) activated by a single pneumatic starting pulse generated by said pneumatic control means to (a) operate the pneumatic means of said bobbin-gripping means to grip a bobbin, (b) operate the pneumatic means for said bobbin drive-actuating means, and (c) operate the pneumatic



means for the braking means to release said braking means and (B) activated by a single pneumatic stopping pulse generated by said pneumatic control means to (a') operate the pneumatic means for the braking means to apply the braking means, and (b') after the bobbin comes to a standstill, operate the pneumatic means for the gripping means to release said bobbin-gripping means.

3,841,575

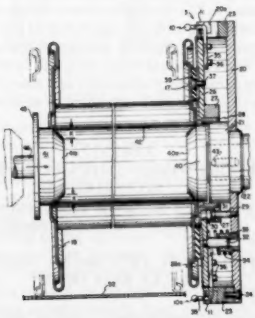
STOCK SNAGGING MECHANISM FOR CONTINUOUS WINDING MACHINE

David L. Pepe, Meriden; Theodore O. Palm, North Haven, and Frank B. Johnson, Middletown, all of Conn., assignors to Davis Electric Company, Wallingford, Conn.

Filed Dec. 4, 1972, Ser. No. 311,527

Int. Cl. B65h *54/02*

U.S. Cl. 242—25 A **14 Claims**



1. In a machine for winding flexible stock material about a take-up spool mounted on a rotatable support means for rotation therewith and having snagging means for anchoring the stock material relative to the take-up spool to permit winding of the stock material as the spool rotates and selectively operable means for moving the snagging means from a closed position to an open position when the take-up spool is

filled with stock material, the improvement in the snagging means comprising:

a. a seating surface on the support means, said seating surface having a tapered portion having a recess therein defining edges on the seating surface; and

b. a gripping member comprising a pin element mounted on the support means for rotational movement with the spool and for linear movement with respect thereto in a direction extending axially thereof between a closed position where the pin element is received at least partially in the recess of the seating surface with the edges on the seating surface intersecting the pin element to define therebetween a stock receiving groove operable to receive and anchor the stock material relative to the take-up spool by a wedging action and an open position where the pin element and seating surface are spaced apart by a distance sufficient to permit release of the stock material from said groove.

3,841,576

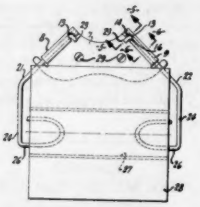
PAPER ROLL HOLDER

Oscar L. Farrer, 3888 Howe St., Oakland, Calif. 94611

Filed Oct. 26, 1972, Ser. No. 301,183

Int. Cl. A47k *10/22*

U.S. Cl. 242—55.2 **1 Claim**



1. A paper roll holder comprising a base plate adapted to be disposed vertically, first and second cylindrical bearing shells on said base plate arranged with their axes in a vertical plane and disposed at substantially 90° to each other to converge at a point above said shells, first and second rods mounted for rotation in said first and second shells respectively, each of said rods having at its lower end an inwardly directed terminal portion adapted to fit within the hollow center of a paper roll, means for restraining said rods against axial movement in said shells, and means for limiting rotational movement of said rods in said shells to substantially 90°, said limiting means for one of said rods including a bent rod end movable in a limited slot in the wall of said shell extending to said base plate.

3,841,577

CONTINUOUS WINDING APPARATUS FOR WEB MATERIAL

Richard W. Phelps, and Richard S. Tetro, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Filed May 21, 1973, Ser. No. 362,472

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 A **11 Claims**

1. Apparatus for continuously winding web material into rolls on successive cores, comprising:

a. a pair of spaced opposed end stands,

b. two roll supporting arms mounted for rotation on a common axis through 360° in both directions in each of said end stand,

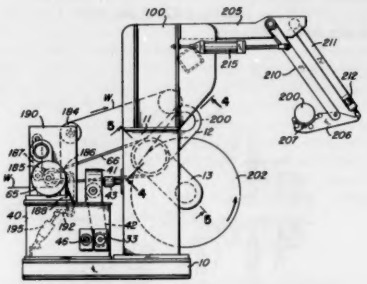
c. means coupling said arms in opposed pairs,

d. means establishing a core loading position for each said pair of arms in a first quadrant of said rotation thereof,

e. means establishing a roll starting position for a core supported by either of said pairs of arms in said first quadrant of rotation thereof,

f. means establishing a final winding position for a roll supported by either of said pairs of arms which lies on the opposite side of said core loading position from said roll starting position in a second quadrant of said rotation thereof contiguous to said first quadrant and therefore requires less than 180° rotation of said arms from said starting position,

g. selectively operable means for severing the web from a roll supported by one of said pairs of arms in said final



winding position and starting the resulting end of the web on a core supported by the other said pair of arms in said starting position, and

h. means for selectively driving each said coupled pair of arms in either direction with respect to and independently of the other said pair to provide for rotation of each said pair successively from said core loading position to said starting position and then to said final winding position at predetermined controlled speed contemporaneously with unloading of the roll from the other said pair and rotation thereof from said final winding position to said core loading position through the other two quadrants of said rotation of said arms.

3,841,578

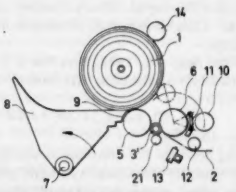
METHOD AND APPARATUS FOR CONTINUOUSLY REELING WEBS OF MATERIAL INTO INDIVIDUAL ROLLS

Gerhard Walter Dorfel, Weilheim-Teck, Germany, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Oct. 16, 1972, Ser. No. 298,019

Int. Cl. B65h *17/08, 19/26*

U.S. Cl. 242—66 **6 Claims**



1. Apparatus for reeling webs of material into rolls which comprises a pair of rollers disposed in opposite parallel spaced relation, at least one of said rollers being rotatably driven, a first reel positioning means, and a second reel positioning

means, said first reel positioning means including means for supporting a first reel upon which the web has been wound into a roll and to position such roll for contact reaction with said rollers at a first set of contact zones thereon, said second reel positioning means including means for positioning a second reel for contact with the web and for contact reaction with said rollers at a second set of contact zones thereon, and means to start winding of the web upon said second reel upon termination of winding the web upon said first reel.

3,841,579

REELING DEVICE FOR INFORMATION CARRIER FILM

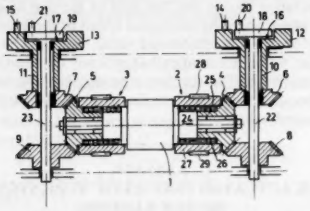
Franz Wingerter, Berlin, Germany, assignor to Beethold Fotosatz GmbH, Munich, Germany

Filed Apr. 9, 1973, Ser. No. 349,103

Claims priority, application Germany, Apr. 17, 1972, 2218490

Int. Cl. B65h *17/02*

U.S. Cl. 242—67.4 **12 Claims**



1. The combination of a film cartridge having a pair of rotatable film winding drums at a fixed center spacing from each other; and a reeling device cooperable with said winding drums so as to wind a length of film back and forth therebetween; said winding drums each having torque transmitting coupling means at its opposite ends, and said reeling device comprising, a pair of rotary drive assemblies at the same center spacing from each other as said winding drums and detachably connectable, respectively, with said coupling means of said winding drums the winding drums can be rotated by the respective drive assembly only in a first direction and the other winding drum can be rotated by the other drive assembly only in a direction opposite to said first, a reversibly rotatable drive shaft, and a pair of one-way clutches operatively interposed between said drive shaft and said drive assemblies so that rotation of said drive shaft in one direction will be transmitted through one of said clutches to one of said drive assemblies and so that rotation of said drive shaft in the opposite direction will be transmitted through the other of said clutches to the other of said drive assemblies.

3,841,580

APPARATUS FOR BRAKING A PLURALITY OF SLIT STRIPS AS THE SAME ARE WOUND ON A REEL

Alexander Rodach, Pforzheim, Germany, assignor to Frau Irma Ungerer, Arlingerstrasse, Germany

Filed Nov. 23, 1973, Ser. No. 418,467

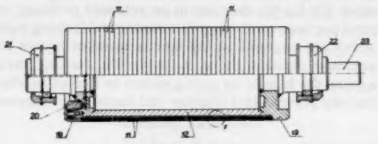
Claims priority, application Germany, Aug. 20, 1973, 2342013

Int. Cl. B65h *23/10*

U.S. Cl. 242—75.2 **8 Claims**

1. Apparatus for braking a plurality of slit strips as the same are wound on a reel, which apparatus comprises

at least one braking roll, which includes a rotatable braking roll shaft, a braking roll shell, which is divided into a plurality of braking rings, which are rotatably mounted on said shaft, said roll further comprising bearing discs, which are interposed between adjacent ones of said rings and locked to said shaft for rotation therewith, first rolling elements disposed between and in rolling contact with adjacent ones of said braking rings and bearing discs, second rolling elements disposed between and in rolling contact with said braking rings and said shaft, and means for maintaining said braking rings and bearing discs in



rolling contact with said first rolling elements and comprising first and second flanges mounted on said shaft and engaging opposite ends of said shell, said first flange being power-operable to perform an axial movement relative to the other flange so as to adjust the axial pressure and the torque transmission between said braking rings and said shaft.

3,841,581

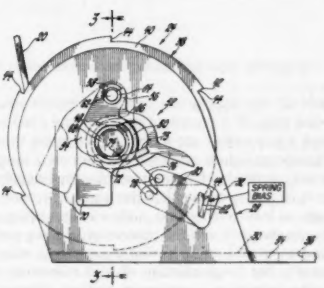
LOCKING MECHANISM FOR A VEHICLE BODY RESTRAINT BELT RETRACTOR

Theodore M. Salamon, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 361,946

Int. Cl. A62b *35/02;* **B65h** *63/00*

U.S. Cl. 242—107.4 **3 Claims**



1. In a vehicle body restraint belt retractor including a housing adaptable to be mounted on a vehicle body, a belt reel rotatably supported by the housing, spring means biasing the reel in a belt winding direction, a belt normally wound on the reel and unwound therefrom for positioning in an occupant restraining position, circumferentially spaced locking surfaces on the reel facing in the direction of unwinding belt movement, a locking member mounted on the housing for movement between a locked position where it is engageable with a selected locking surface on the reel to prevent belt unwinding and an unlocked position where these components are disengaged so as to allow belt unwinding, and spring means biasing the locking member to unlocked position, a mechanism for actuating the locking of the retractor comprising the combination of:

an inertia member mounted on the retractor housing for movement from a rest position to an intermediate position under the impetus of vehicle deceleration forces acting directly on the mass of the inertia member during

forward vehicle deceleration of a predetermined abruptness;

annular driving means rotatable with the belt reel and engageable with the inertia member as it moves to the intermediate position so that reel rotation resulting from belt unwinding as a belted occupant moves forwardly during the vehicle deceleration causes the driving means to move the inertia member to an actuated position; and

control portions on the inertia member and locking member which are engaged as the inertia member moves to the actuated position so as to move the locking member against the bias of its spring means to locked position to thereby prevent reel rotation and further belt unwinding.

3,841,582

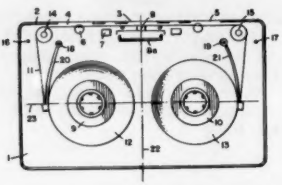
GUIDE ELEMENTS FOR MAGNETIC TAPES WOUND OR TO BE WOUND IN THE FORM OF PACKS ON FLANGELESS SPOOLS

Norbert Schaeffer, Ludwigshafen; Horst Fitterer, Heildelberg-Hasenleiser; Karl Uhl, Frankenthal; Georg Schnell, Ludwigshafen, and Wilhelmus Andriessen, Wachenheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rheim, Germany

Filed Dec. 16, 1971, Ser. No. 208,704

Int. Cl. G11b *23/10*

U.S. Cl. 242—199 **11 Claims**



1. In a magnetic tape assembly, the combination comprising:

a. a pair of tape-supporting flangeless spools rotatable to unwind tape off a pack on one spool and wind tape onto a pack on the other spool, said tape passing between the packs around guide means in the form of a loop, and

b. at least one guide element movable substantially radially to one of said spools and in the plane of rotation of said spools, at least part of said guide element being arranged between the pack and the outermost winding generally at a tangent to said pack, having a guide face which is substantially flat longitudinally of said outermost winding, thereby providing continuous surface contact over a substantial length of said face between said face and the inside of said outermost winding when said tape is in motion, having adjacent that end of the guide face at which said outermost winding merges with said pack, a margin which is at least as close to the pack as said face so that said outermost winding is guided smoothly and virtually tangentially to said pack at said margin, and having guide flanges extending outwardly above and below said outermost winding.

3,841,583

MAGNETIC TAPE DRIVING SYSTEM

Ryuichi Kawa, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 318,755

Claims priority, application Japan, Dec. 30, 1971, 46-1166

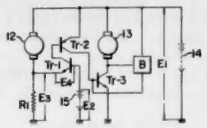
Int. Cl. B11b *15/32;* **G03b** *1/04*

U.S. Cl. 242—201 **8 Claims**

1. In a magnetic tape drive system for a magnetic recording and reproduction device having a tape supply reel driven by a first motor and a tape take-up reel driven by a second motor, the improvement comprising:

first control means responsive to the rotational speed of the first motor and operative to maintain the rotational speed of the first motor at a predetermined value during the first half of a fast tape winding operation;

second control means responsive to the rotational speed of the second motor and operative to maintain the rotational speed of the second motor at the predetermined value



during the second half of a fast tape winding operation; said second control means being automatically rendered inoperative during the first half of the fast tape winding operation when the rotational speed of the second motor is below the predetermined value, and said first control means being automatically rendered inoperative during the second half of the fast tape winding operation when the rotational speed of the first motor is below the predetermined value.

3,841,584

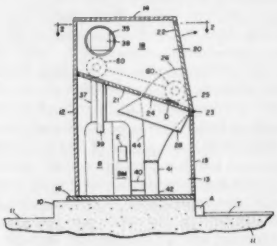
VEHICLE ACTUATED PNEUMATIC TUBE SYSTEM FOR MOTOR BANKING

Roland L. Robinson; Chadwick C. Boltz; Evan P. Everson, all of Cedar Rapids, and Douglas E. MacPherson, Marion, all of Iowa, assignors to Walter Kidde & Company, Inc., Clifton, Nebr.

Filed Aug. 16, 1972, Ser. No. 280,990

Int. Cl. B65g *51/32*

U.S. Cl. 243—19 **9 Claims**



1. In a customer kiosk station for banking, the station having a housing and portions of a pneumatic tube system including a carrier sending tube and a carrier receiving tube, the sending tube having a carrier inlet and a sending valve downstream of the inlet with respect to the direction of travel of a carrier therein, the sending valve being effective to close off the inlet from the tube system except when a carrier is inserted therein for sending through the tube, the receiving tube having a carrier outlet and a receiving valve upstream of the outlet with respect to the direction of travel of a carrier therein, the receiving valve being effective to close off the outlet from the tube system except when a carrier is received therefrom through the outlet, the sending and receiving tubes being pneumatically interconnected downstream of the sending valve and upstream of the receiving valve with respect to the direction of travel of a carrier in the sending and receiving tubes for forced circulation of carrier moving air through the system by a blower, and an electrical control circuit control-

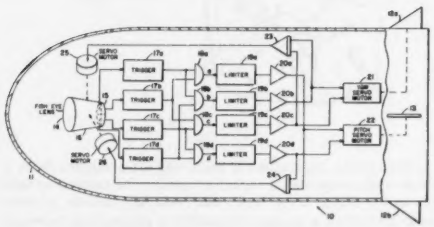
ling sending of a carrier through the tube system, the improvement comprising: a carrier chamber in the kiosk station having a pair of opposite side walls, an upright front door and a floor inclining downwardly toward the door, the floor having a forward portion for supporting a carrier in horizontal position with its long axis alongside the inner face of the door, an electrical motor in the control circuit operatively connected to the door for opening thereof when the motor is energized in one direction of rotation and for closing thereof when the motor is energized in the opposite direction of rotation, the receiving tube inlet being disposed in a rear portion of one of the side walls above the floor so that a carrier received therefrom enters the chamber in a substantially horizontal position and is halted by the opposite side wall, whereupon the carrier rolls forwardly down the floor towards the door and onto the forward floor portion, the carrier being thereafter manually removable from the chamber when the motor is energized in its door opening direction and the door is open, the sending tube being generally vertically disposed with its inlet exposed through an aperture in the floor disposed intermediate the chamber side walls and immmediately behind the rear face of the door, whereby the chamber forms no part of the path of the air circulating through the tube system.

3,841,585

CONSTANT BEARING COURSE HOMING MISSILE

Ernst T. Evers-Euterneck, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 6, 1973, Ser. No. 338,476
Int. Cl. F41g *7/00, 9/00, 11/00*
U.S. Cl. 244—3.15 **3 Claims**



1. A homing missile having an elongated body with a longitudinal axis and yaw and pitch control means and including: optical sensor means including a wide-angle lens and a matrix detector and means for supporting said lens and detector; a first set of respective operators for said control means; logic means connected to said detector for providing output control signals as inputs to said operators; a pair of summers having inputs connected to the inputs of said operators and each having an output; and a second set of respective operators attached between said body and said means for supporting and having inputs connected to said outputs of said summer.

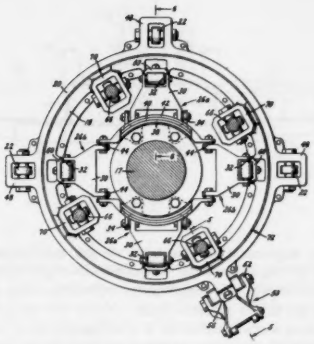
3,841,586

ROTOR SWASHPLATE ASSEMBLY

William D. Broadley, Lansdowne; Kenneth I. Grina, Media, and Carlton H. Schaub, Newtown Square, all of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 26, 1973, Ser. No. 354,726
Int. Cl. B64c *27/74, 27/76*
U.S. Cl. 244—17.25 **9 Claims**

1. In a rotorcraft having a rotatable rotor assembly including a rotor connected to a rotorshaft; a control system including a non-rotating portion connected to the aircraft and a rotating portion connected to the rotor assembly; and a swashplate assembly interface between the rotating and non-rotating portions of the control system which conprises: a swashplate including a rotatable ring, a non-rotatable ring and means to permit rotation connected to said rotatable ring and to said non-rotatable ring; a first pair of opposed scissor links, one end of each link being operably connected to said rotating ring, the other end of each link being operably connected to the rotor assembly; a second pair of opposed scissor links, one



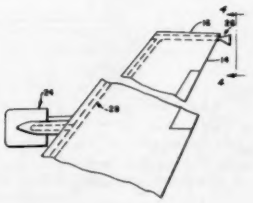
end of each link being operably connected to said rotating ring so that each link is displaced approximately 90° from each of the links of said first pair of scissor links, the other end of each link of said second pair of scissor links being operably connected to the rotor assembly means permitting said links to angularly deflect with respect to the rotor assembly in the plane of rotation.

3,841,587

VORTEX ARRESTOR AND VISUALIZATION SYSTEM

Lyle C. Freed, 5400 Pooks Hill Rd., Bethesda, Md. 20014

No Drawing. Filed Mar. 16, 1973, Ser. No. 341,922
Int. Cl. F15d *1/06;* **B64c** *23/06*
U.S. Cl. 244—40 A **16 Claims**



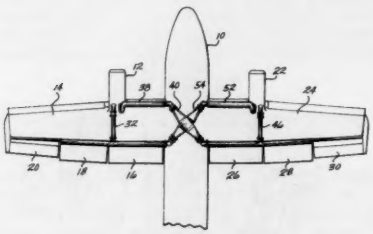
1. A method of arresting a vortex that develops under ambient conditions at a predetermined point of origin, including the steps of: generating a source of gas under a static pressure higher than ambient; accelerating flow of said gas in the direction of the vortex; controllably heating the gas to increase the velocity thereof during acceleration to supersonic value; and volumetrically expanding the gas for discharge into the vortex at a subsonic velocity.

3,841,588

ASYMMETRIC AUGMENTATION OF WING FLAPS

Alison M. Arnold, Mercer Island; Donald W. Hapke, Issaquah, and Frank J. Traeger, Jr., Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 24, 1973, Ser. No. 391,374
Int. Cl. B64c 15/00
U.S. Cl. 244—42 CC 6 Claims



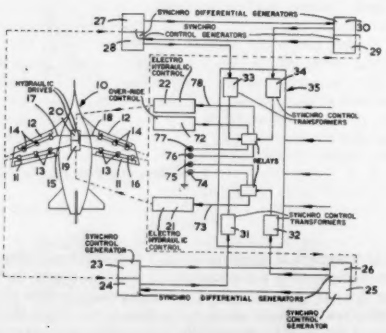
1. An augmentation flap and aileron mechanism for an airplane having at least two propulsion units placed symmetrically with respect to a longitudinal axis comprising: means for blowing gas under pressure from at least one propulsion unit to augment flaps located on a contiguous wing, means for simultaneously blowing a greater volume of gas under pressure from the same propulsion unit to augment flaps and to blow over upper surfaces of an aileron located on an opposite wing, means for blowing gas under pressure from at least a single second propulsion unit, located on an opposite wing from the first propulsion unit, to independently augment flaps located on a contiguous wing and means for simultaneously blowing a greater volume of air under pressure from the second propulsion unit to independently augment flaps and to blow over upper surfaces of an aileron located on an opposite wing to effect an asymmetric flap augmentation when one of the engines fail.

3,841,589

ACTUATING ARRANGEMENTS FOR AIRCRAFT CONTROL SURFACES

Brian Lawrence Appleby, Wolverhampton; Alan Malpass, Dudley, and Kenneth Harold Ellis, Wolverhampton, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Sept. 25, 1972, Ser. No. 291,534
Int. Cl. B64c 13/18
U.S. Cl. 244—77 F 11 Claims



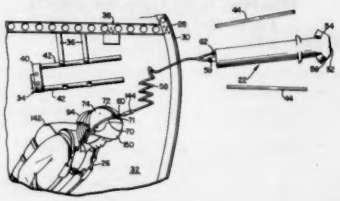
1. An actuating arrangement for lift control surfaces on each of a pair of aircraft wings, comprising drive means, a control apparatus, responsive to electrical control signals, for the drive means, first and second transmissions between the drive means and first and second control surfaces on the respective wings, first and second generating means coacting with the first and second transmissions respectively to provide first electrical signals respectively dependent on the driven positions of the said transmissions, third and fourth generating means coacting with the first and second transmissions respectively and responsive to said first electrical signals from said second and first generating means respectively to provide second electrical signals dependent on a difference between the driven positions of the transmissions, and first and second switch means operable in response to said second electrical signals, said control apparatus being responsive to said second electrical signals and being effective to arrest the said transmissions when both said switch means are operated.

3,841,590

HEAD RESTRAINT APPARATUS

Gordon A. Valentine, Denver, Colo., assignor to Stanley Aviation Corporation, Aurora, Colo.

Continuation-in-part of Ser. No. 165,238, July 22, 1971, abandoned. This application May 11, 1973, Ser. No. 359,480
Int. Cl. B64d 11/00
U.S. Cl. 244—138 R 11 Claims



1. An escape apparatus for removing an occupant from a vehicle and comprising a rocket adapted to be carried by said vehicle for flight away from said vehicle, flexible towline means providing a motion transmitting connection between said rocket and said occupant and being extendible to a taut motion-transmitting condition by flight of said rocket away from said vehicle, said rocket being effective upon flight away from said vehicle to forcibly remove the occupant from said vehicle through the connection provided by the extended towline means, headgear adapted to be worn by said occupant, an eyeshield mounted on said headgear for displacement between a retracted position and an eye-shielding position, and means conditioned by the extension of said towline means to said taut condition for causing said eyeshield to be displaced from said retracted position to said eye-shielding position.

3,841,591

FABRIC AND METHOD FOR FORMING PIPE REINFORCEMENT

Wilbur E. Tolliver, Holland, Mich., assignor to New York Wire Mills Corp., Tonawanda, N.Y.

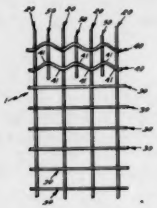
Filed Feb. 8, 1973, Ser. No. 330,609
Int. Cl. F16l 9/08
U.S. Cl. 245—1 13 Claims

1. Fabric for forming reinforcing cages for pipe, such cages including a plurality of longitudinal strands, a plurality of circumferential strands and a enlarged bell end, said fabric comprising:

a plurality of longitudinal defining strands of material suitable for pipe reinforcing cages joined to a plurality of

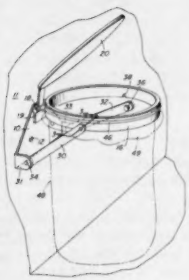
circumferentlal defining strands of material suitable for forming reinforcing cages;

at least a pair of circumferential defining strands at the bell forming end of said fabric being non-rectilinear;



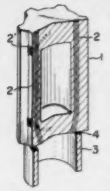
tie means, which are shorter in length than said longitudinal defining strands, rigidly interconnecting only said non-rectilinear circumferential defining strands between each adjacent pair of longitudinal defining strands.

3,841,592
BAG HOLDER
Louis J. Witten, 47 Harland St., Milton, Mass. 02186
Filed Mar. 16, 1973, Ser. No. 342,212
Int. Cl. B65b *67/12*
U.S. Cl. 248—101 **11 Claims**



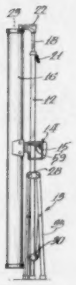
1. A holder for a bag comprising;
a support bracket,
a hoop for supporting a bag,
means for securing a bag at its open end to said hoop,
a hinge means secured to an upper portion of said support bracket and including an end secured to said hoop for pivotally supporting said hoop from said bracket in either a substantially horizontal useable position, perpendicular to said support bracket, or a substantially vertical non-useable position, parallel to and depending from said support bracket,
a pair of spaced arms extending from a lower portion of said support bracket and releasably engaging with opposite sides of said hoop,
said hoop having means for receiving said arms and said arms fixedly attached to said bracket but pivotal with respect thereto,
a cover,
said hinge means including a pivotally mounted connecting strip extending therefrom and connected to said cover, said connecting strip having a length to permit said cover to overlie and cover said hoop in both the useable and nonuseable positions of said hoop.

3,841,593
SUPPORTING STRUCTURE FOR PRESSURE VESSEL FOR NUCLEAR REACTORS
Kiyoshi Muto, and Toshihiko Hisada, both of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan
Filed July 28, 1972, Ser. No. 276,258
Claims priority, application Japan, Jan. 19, 1972, 47-6921
Int. Cl. G21c *13/08*
U.S. Cl. 248—146 **10 Claims**



1. A cylindrical supporting structure connected integrally with the lower portion of a prestressed concrete pressure vessel for a nuclear reactor for supporting said pressure vessel thereon, comprising a plurality of substantially equally radially spaced circumferential separations extending through a substantial portion of said cylindrical supporting structure for dividing same into a plurality of relatively movable concentric cylindrical elements.

3,841,594
COLLAPSIBLE PROJECTION SCREEN
Robert W. Zinn, Addison, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.
Filed May 18, 1973, Ser. No. 361,853
Int. Cl. G03b *21/56*
U.S. Cl. 248—169 **9 Claims**



1. A projection screen structure, comprising,
a. an elongate standard,
b. a screen support adjustable along an intermediate portion of the standard,
c. a screen casing mounted on the screen support,
d. a rolled screen in the casing,
e. a hanger on the upper end of the standard,
f. a latch on the screen support for holding the support in adjusted positions on the standard,
g. a stop lug on the standard normally engageable with the latch for limiting downward movement of the support at a position defining a storage position of the support on the standard,

h. means mounting the support on the standard for bypassing the stop lug, and

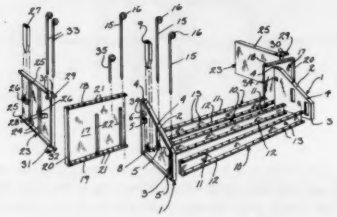
i. means mounting the latch on the support for selectively bypassing the stop lug to lower the support past the stop lug.

3,841,595

REUSEABLE STEP AND PORCH FORM

William M. Brown, Milwaukee, Wis., assignor to Ultra Products, Inc., Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,672
Int. Cl. E04g *13/06*
U.S. Cl. 249—14 **8 Claims**



1. In a combination metal porch/step form, a pair of side panels and a pair of front panels having upper and lower flanges providing the porch/step form with the forward ends of the side panels abutting the front panels at a joint area and extending rearwardly from the front panels at substantially right angles thereto, bracket members overlying each of the side panels and the upper and lower flanges of the front panels at the joint therebetween, a pair of porch panel pins extending vertically through the bracket members and the upper and lower flanges of each of the front panels to secure a respective front panel and side panel rigidly together at the joint area therebetween, a pair of horizontally spaced upper and lower outwardly flanged reuseable, one piece stringer members extending forwardly from each front panel with spaced aligned apertures therein at predetermined locations, a respective second pair of vertically extending pins securing each front panel to a stringer, each of said stringers having longitudinally spaced vertical slots in the side wall thereof in opposite alignment with a slot in the other stringer, risers having upper and lower flanges with aligned apertures therein at spaced predetermined locations and extending horizontally through the slots of the stringers and of lesser height than said slots and the flanges of less width than the slots to provide the step form for holding concrete during its formation into steps, riser pin bracket members secured beneath each slot on the outside of each stringer and having an aperture therein vertically aligned with an aperture in the upper flange of a respective stringer and the apertures in the upper and lower flanges of the riser, and riser pins extending through the apertures in the said stringer and riser flanges and in each bracket to secure a riser against the rear edge of a slot, and riser pins being readily removable after the concrete has set for removal of the respective risers through the slots within which the risers are supported.

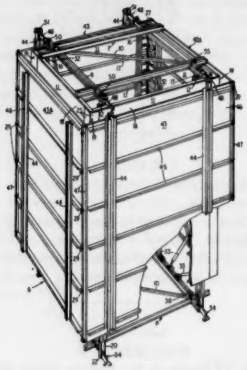
3,841,596

CONCRETE SHAFT FORMING UNIT

Alan Sidney Cull, 1 Marion Cres., Lapstone, New South Wales, Australia (2773)

Filed Aug. 10, 1973, Ser. No. 387,281
Int. Cl. E04g *11/28*
U.S. Cl. 249—20 **6 Claims**

1. A concrete shaft forming unit comprising an upper horizontal frame made up of three or more connected horizontal members, a similar lower horizontal frame, a form box having upright panels corresponding respectively to the members of the upper frame, each panel comprising a frame and attached sheeting adapted to engage with its outer surface concrete to be poured, each panel sheet having two upright edges, each upright edge being adjacent to but spaced from the adjacent upright edge of an adjacent sheet, first means coupling adjacent edges of adjacent sheets so as to present a substantially continuous outer surface to the concrete to be poured, second



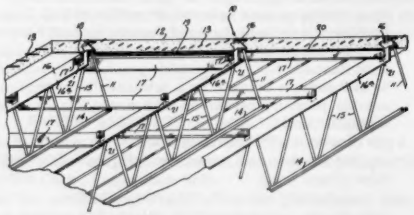
means for pivotally suspending the form box from the upper frame, third means for supporting the form box on the lower frame by knee action pivot means, fourth means for maintaining a continuous relationship between the upper and lower frames and fifth means on the lower frame for detachably supporting the lower frame of a first abutment, said fifth means being adapted to disengage the first abutment automatically when the unit is lifted and to engage automatically a second higher abutment when the unit is lifted sufficiently.

3,841,597

FLOOR FORM WITH CONNECTED TRUSS SUPPORTS

Ernest O. Butts, and John S. Hall, both of Ottawa, Canada, assignors to Hambro Structural Systems Limited, Ottawa, Ontario, Canada

Division of Ser. No. 220,627, Jan. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 872,017, Oct. 29, 1969, abandoned, and a continuation-in-part of Ser. No. 145,758, May 21, 1971. This application July 24, 1972, Ser. No. 274,415
Claims priority, application Canada, Nov. 4, 1968, 034293
Int. Cl. E04g *11/38*
U.S. Cl. 249—30 **6 Claims**



1. In formwork for constructing a composite steel and concrete floor, the combination which comprises:

a steel joist having

top chord means,

a bottom chord, and

web means joining and separating the top chord means and the bottom chord;

said to chord means including:

a top portion generally horizontally disposed relative to said web means,

a lower portion generally horizontally disposed relative to and extending along the top of said web means, and

an intermediate portion connecting said top portion to said lower portion, said intermediate portion extending obliquely between the top and lower portions to connect one edge of the top portion to the opposite edge of the lower portion;

said joist having means extending vertically below the other edge of said lower portion for connecting said top chord means and web means;

at least an additional steel joist substantially alike the first-mentioned steel joist, the additional steel joist being laterally spaced from and extending parallel to the first-mentioned steel joist with the said intermediate portion of each top chord means of both joists extending in the same oblique direction so that the said opposite edges of the respective lower portions of each top chord means extend along the same side of the respective joists and the said vertically extending means of each joist extends horizontally along the corresponding other side of each said joists;

at least two spanner bars extending laterally between and being connected to said vertically extending means of each of said first-mentioned and additional steel joists for spacing said vertically extending means a predetermined distance apart, the tops of said bars being a given height below the said lower portion of each steel joist; and

a substantially rigid pouring form having a thickness of substantially said given height, said form being supported directly by the spanner bars and having a width of substantially said predetermined distance extending horizontally substantially from said vertically extending means of the first-mentioned steel joist substantially to said vertically extending means of the additional steel joist with one edge of said pouring form being underneath and held down by the said lower portion of the top chord means of one of said joists while being directly supported as aforesaid by said bars closely adjacent said one lower joist lower top chord portion, so that a concrete slab may be poured upon the form to embed the top chords down adjacent the level of the lower portions thereof to create a composite steel and concrete floor below which the web means and lower chords of the steel joists depend, with the aforesaid substantially rigid, horizontally extending held down and directly supported pouring form contributing to the development of diaphragm action in and hence lateral stability of said formwork both before any concrete pouring and during the setting of a poured concrete floor.

3,841,598

A MOLD FOR CASTING A HYDROPHILIC CONTACT LENS BLANK

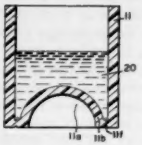
Bernard J. Grucza, 775 Main St., Buffalo, N.Y. 04203

Division of Ser. No. 290,376, Sept. 19, 1972, Pat. No. 3,807,398. This application Nov. 27, 1973, Ser. No. 419,245

Int. Cl. B29c *5/00*

U.S. Cl. 249—61 **1 Claim**

1. Molding apparatus for molding a lens button in hard form comprising a one-piece mold in cylindrical shape made of high temperature-resistant plastic material selected from the group consisting of high density polyethylene, polytetrafluorethylene and room-temperature-vulcanized silicone rubber, said mold having an inwardly curved closed bottom matching the corneal shape and a frangible thinner annular portion surrounding the curved bottom forming a break-away circular portion at the closed bottom, which breaks under ram pressure and movement for ejecting the hard button and an open top, the



volume of the mold being from about 5 to about 12 times the volume of the lens which is to be cut above the bottom curved portion of the button.

3,841,599

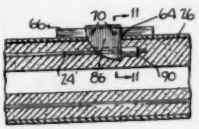
ANCHOR PLATE MEANS FOR REINFORCING RODS

Myers Van Buren, Cheriton, Va., assignor to Bayshore Concrete Products Corp., Cape Charles, Va.

Division of Ser. No. 151,284, June 9, 1971, Pat. No. 3,738,786, which is a division of Ser. No. 8,139, Jan. 16, 1970, Pat. No. 3,652,756, which is a division of Ser. No. 639,371, May 18, 1967, Pat. No. 3,501,881. This application May 9, 1973, Ser. No. 358,470

Int. Cl. E04g *17/10*

U.S. Cl. 249—205 **7 Claims**



1. An anchor plate arrangement for mounting reinforcing rods inside concrete molds, said anchor plate arrangement comprising an anchor plate, an anchor plate mounting means adapted for detachably mounting said plate to a lateral mold wall to protrude inwardly from said wall and means for frictionally abutting said plate to releasably connect a reinforcing rod to said plate in a manner permitting said plate to maintain tension in said rod while permitting ready withdrawal of said plate from said rod by sliding movement of said plate out from said mold wall.

3,841,600

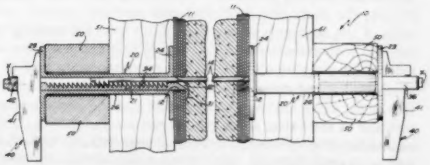
CONCRETE FORM TIE ROD ASSEMBLY

Eugene C. J. Aubee, Jr., Carpenter Rd., Hope, R.I. 02831

Filed Jan. 9, 1973, Ser. No. 322,234

Int. Cl. E04g *17/06*

U.S. Cl. 249—213 **10 Claims**



1. A concrete form tie rod assembly comprising an elongated tie rod having gripping means formed adjacent at least one or its ends, at least one anchor pin having a head and an elongated body, means on the elongated body portion for engaging the gripping means on ssid tie rod when the elon-

gated tie rod and the elongated body of the anchor pin are positioned parallel to each other with a portion of their longitudinal sides in contact with each other, said head engaging the inner form wall, tubular sleeve means slidable over the end of said tie rod and the body portion of the anchor pin when these two members are grippingly engaging each other,

means for locking the tubular sleeve means in a fixed position after it has been slid over the end of the tie rod and the body portion of the anchor pin comprising a member slidably engaging an end of the sleeve and said pin.

3,841,601

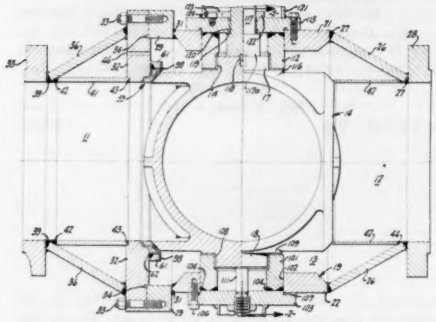
FABRICATED BALL VALVE

Marvin H. Grove, and Kee W. Kim, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Continuation of Ser. No. 135,309, April 19, 1971, abandoned. This application May 18, 1973, Ser. No. 361,432

Int. Cl. F16k *5/06, 27/10*

U.S. Cl. 251—315 **3 Claims**



1. In a valve of the rotary ball type, a valve body having flow passages adapted to be connected to associated piping, a rotatable ball valve member within the body having a port adapted to register with the flow passages for open position of the valve, the body including a main part in the form of a cylindrical pressure resisting shell surrounding the ball and generally annular in transverse section, the shell being formed of a plurality of segments secured together by spaced longitudinal parallel weld connections, one segment being a flat mounting plate of uniform thickness disposed between the longitudinal edges of two adjacent segments, said two adjacent segments having a uniform wall thickness and being segments of a cylinder; said plate extending the length of the shell and having its longitudinal parallel edges welded to the edges of the adjacent segments, aligned trunnion means on the ends of the ball, bearing means carried by the mounting plate and serving to journal one of said trunnion means within the shell, additional bearing means for journalling the other trunnion means, the body also including end portions secured to the ends of the segments of the main body part for making connection with associated piping, one of said end portions comprising an annulus secured to the corresponding end of the shell, said annulus serving to mount sealing means forming a fluid-tight valve seal between the ball and the body for closed position of the valve, a conical shaped section having its large end secured to the outer margin of said annulus by welding, and a cylindrical pipe section disposed within the conical section and having its one end secured to the small end of the conical section by welding and having its other end secured to the annulus by welding, said annulus having a pressure equalizing duct extending through the same to establish communication between the space surrounding the sealing means and the space between the conical and cylindrical sections.

3,841,602

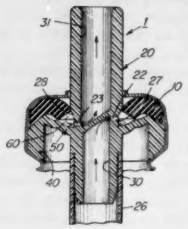
VALVE

William D. Mildern, 8303 W. Sample Rd., Apt. 5, Coral Springs, Fla. 33065

Filed Nov. 29, 1973, Ser. No. 420,229

Int. Cl. B65d *83/14*; **F16k** *21/00*

U.S. Cl. 251—353 **14 Claims**



1. A valve for a pressurized aerosol dispensing container which valve comprises

an axially movable, tubular valve body which includes

a cylindrical bore therethrough with a wall blocking the bore and separating the bore into

an eduction passageway and

a discharge passageway,

an inlet orifice in said valve body in communication with said eduction passageway,

an outlet orifice in said valve body in communication with said discharge passageway, and

said inlet and outlet orifices being vertically spaced from each other with said inlet orifice above said outlet orifice;

a diaphragm integral with said valve body and urging said valve body upwardly toward closure; and

an annular elastomeric sealing gasket

encompassing said valve body with its inner margin normally sealingly occluding both of said orifices to close said valve and

overlying said diaphragm to provide an annular chamber therebetween when said valve is open which chamber communicates said inlet orifice with said outlet orifice; the vertical spacing between said inlet and outlet orifices providing occlusion of the inlet orifice before the outlet orifice as the valve moves toward closure.

3,841,603

LIFTING APPARATUS

Kerry G. Lund, St. Paul, and Leo A. Porter, North St. Paul, both of Minn., assignors to Pic-A-Tent-Top Carrier, Inc., St. Paul, Minn.

Filed Mar. 19, 1973, Ser. No. 342,721

Int. Cl. B66f *9/06*

U.S. Cl. 254—4 R **4 Claims**

1. A mobile crane for lifting or lowering bulky objects, comprising:

a. a generally horizontally extending, generally planar base frame means having a lifting and steering control end and a second end, generally opposite said control end, said base frame being mounted on wheels and including a generally horizontal cross member intermediate said control end and said second end;

b. a generally vertically extending, mast-like guide member supported by said cross member;

c. a tracking means associated with said guide member for generally up and down movement therealong;

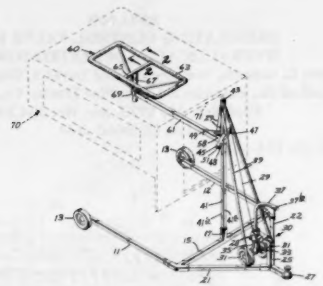
d. a generally horizontally extending, raisable and lowerable lift arm having a free end and a supported end, said supported end being operably associated with said tracking means and

guided in its up and down movement by said tracking means and said guide member;

e. a lifting platform attached to said free end of said lift arm;

f. a support means, integral with said control end and extending upwardly from the plane of said base frame means and including a generally horizontal portion for supporting a lifting control means above the plane of said base frame means;

g. a lifting control means mounted on said horizontal portion of said support means;



h. a housing means for the vertical portion of a tiller-like steering element, said housing means extending generally vertically downwardly from said horizontal portion of said support means;

i. a moveable tiller-like steering element having a generally vertically extending portion enclosed within said housing means and including at least one steerable wheel operably associated with the lower end of said vertically extending portion; and

j. an elongated lifting element extending from said lifting control means to said lift arm.

ERRATUM

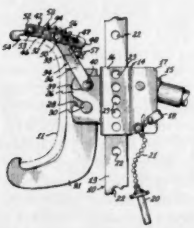
For Class 254—78 see:
Patent No. 3,842,426

3,841,604

BUMPER JACK

Mary B. Haynes, 5322 W. Cambridge, Phoenix, Ariz. 85035

Filed July 30, 1973, Ser. No. 383,795
Int. Cl. B66f *1/04, 3/00*
U.S. Cl. 254—111 **5 Claims**



1. A bumper jack comprising in combination:

a. a standard having a plurality of apertures formed therein in spaced increments along the length thereof;

b. a carriage mounted on said standard and movable along the length thereof, said carriage having at least one aperture formed therein which is selectively alignable with each of the apertures of said standard by movement of said carriage along said standard;

c. an interlock pin on said carriage for removable insertion through the aperture of said carriage and into a selected one of the apertures of said standard to prevent unintentional movement of said carriage along said standard;

d. lifting hook means mounted on said carriage, said lifting hook means engagable with the bottom portion of an automobile bumper; and

e. securing hook means mounted on said carriage and engagable with the upper portion of the automobile bumper for demountably fixedly securing the bumper between said securing hook means and said lifting hook means when the bumper is positioned therebetween, said securing hook means comprises,

i. a first link pivotably connected on one end thereof to said carriage,

ii. a second link pivotably connected on one end thereof to the other end of said first link and longitudinally movable with respect thereto,

iii. biasing means interconnecting said first link and said second link for longitudinally urging said second link toward said first link, and

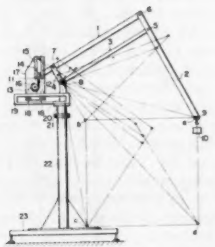
iiii. a hook pivotably connected to the other end of said second link.

3,841,605

MOVING APPARATUS FOR A LOAD

Masami Joraku, Tohkai-Mura; Seizi Yomekura, Hitachi, and Shigeyoshi Kawano, Hitachiohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1972, Ser. No. 317,773
Claims priority, application Japan, Dec. 22, 1971, 46-104818
Int. Cl. B66f *3/00, 1/00*
U.S. Cl. 254—127 **17 Claims**



1. A moving apparatus for moving a load comprising

lifting means including a motor for lifting a load,

speed control means for controlling the moving speed of the load,

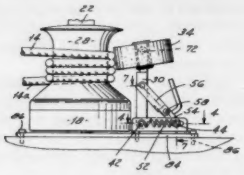
force control means for controlling the force applied from said motor to said lifting means to correspond to the weight of the load, and

first means for selectively stopping the operation of said speed control means.

3,841,606
SELF-TAILING WINCH

Maurice G. Declercq, 1143 Buckingham Rd., Grosse Pointe, Mich. 48230

Filed Oct. 26, 1973, Ser. No. 410,229
Int. Cl. B66d 1/30
U.S. Cl. 254—150 R 10 Claims

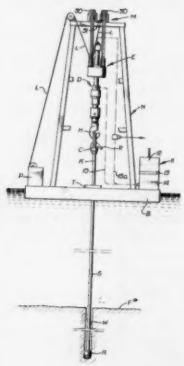


1. A self-tailing sailboat winch assembly comprising, in combination:
a sailboat winch drum,
a rotatable pinch roller,
support means supporting the pinch roller for rapid lateral shifting between a first position sufficiently remote from the winch drum to allow rapid manual wrapping over one end of the winch drum of several turns of line thereabout and a second position closely adjacent the drum and pinching the line thereagainst, and
quick release locking means for holding said pinch roller in said second position.

3,841,607
HYDRAULIC MOTION COMPENSATING APPARATUS

Edward Larralde, and Glen Robinson, both of Santa Barbara, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed July 25, 1972, Ser. No. 274,880
Int. Cl. B66d 1/28
U.S. Cl. 254—172 15 Claims

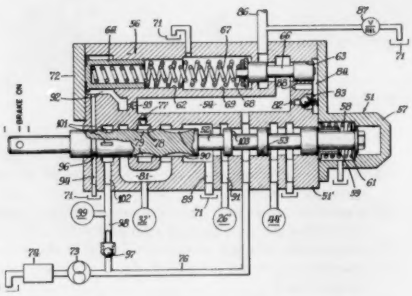


1. An apparatus for maintaining a predetermined stress in a running string disposed in a well bore and which is supported by a rig, including a derrick and a suspension mechanism supported from the upper portion of the derrick: comprising a travelling block structure adapted to form part of the suspension mechanism; a hook structure adapted to support the running string therebelow; a motion compensating apparatus disposed between and connected to said block structure and hook structure; said motion compensating apparatus comprising cylinder means coaxial of said hook sructure; piston means slidable in said cylinder means and connected to said hook structure; said travelling block structure being split and fixedly mounted to said cylinder means on opposite sides of said cylinder means substantially below the upper end of said cylinder means and with said cylinder means disposed between said split block structure; and means for maintaining a fluid medium under pressure in said cylinder means for exerting an upward force on said piston means as said piston means and cylinder means move longitudinally relative to one another in both longitudinal directions.

3,841,608
MODULATING CONTROL VALVE FOR HYDRAULICALLY OPERATED WINCH

James L. Schmitt, Washington, and David S. Ohaver, Canton, both of Ill., assignors to Caterpillar Tractor Co., Peona, Ill.

Filed Feb. 21, 1973, Ser. No. 334,353
Int. Cl. B66d 1/44
U.S. Cl. 254—187 R 6 Claims



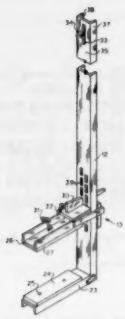
1. A hydraulically operated winch comprising
a rotatable winch drum,
a power train having a normally disengaged clutch being hydraulically engageable for operatively coupling a power input means with a winch drum drive shaft, a normally engaged brake effectively securing the winch drum drive shaft against rotation while being hydraulically releasable to permit rotation of the winch drum drive shaft and a clutch normally coupling the winch drum drive shaft with the winch drum while being hydraulically disengageable to permit free-wheeling of the winch drum,
a source of fluid under pressure, and
a modulating control valve having a valve body defining an inlet chamber in communication with the fluid source and a bore, the bore being in communication with the inlet chamber, an actuating chamber for releasing the normally engaged brake, an actuating chamber for engaging the normally disengaged clutch and an actuating chamber for disengaging the normally engaged clutch, a single regulating spool being slidable in a bore with resilient means urging the regulating spool into a centered position in the bore wherein the spool communicates all of the clutch and brake chambers with fluid drain means, the single regulating spool being movable in a first direction of travel from its centered position for variably communicating both of the actuating chambers for the brake and the normally disengaged clutch with the inlet chamber, the regulating spool being movable in a second direction of travel from its centered position for variably communicating the brake actuating chamber with the inlet chamber, the regulating spool being further movable in its second direction of travel for communicating the actuating chamber of the normally engaged clutch with the inlet chamber and means for selectively modulating fluid pressure within the inlet chamber.

3,841,609

PERIMETER GUARD RAIL SYSTEM

Malcolm K. Smith, P.O. Box 765, Ormand Beach, Fla. 32017

Filed Mar. 17, 1972, Ser. No. 235,686
Int. Cl. E04h 17/14
U.S. Cl. 256—59 4 Claims



1. A movable guard rail clamp system, comprising in combination:

an elongated post member having two ends and at least one opening therethrough between said ends and means for attaching a rail thereto to form a protective guard rail between pairs of elongated post members when anchored to a concrete slab;

clamp means located on said elongated member, said clamp means having a pair of jaws extending from said elongated member, each said jaw having resilient friction gripping surfaces thereon to form the gripping surfaces of said jaws, and at least one said jaw being movably mounted on said elongated member and extending at an acute angle between said elongated member and said gripping surface of said movable jaw;

anchoring means for locking said clamp means to a slab with said jaws attached to either side of the slab, said anchoring means including a wedge-shaped member to force said jaws into engagement with a concrete slab to hold said elongated member in position on said slab by driving said wedge shaped member into an opening in said elongated member and against said movable jaw; and said wedge shaped member being movably attached to said clamp means, whereby said elongated member may be rapidly attached to a flat surface between a pair of jaws.

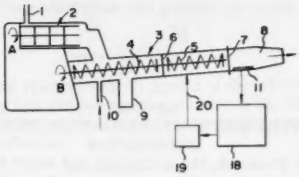
3,841,610

APPARATUS FOR CONTINUOUSLY AUTOMATICALLY CONTROLLING THE WATER CONTENT OF KNEADED VISCOUS MATERIALS

Keiji Hanzawa, Sapporo; Yoshiyuki Takahashi, Aikawa-machi; Nobuyoshi Suga, Kawasaki; Tojo Kato, Atsugi; Makoto Handa; Hiromichi Hayashi, both of Sapporo; Shinichi Taneya, and Toshimaro Sone, both of Tokyo, all of Japan, assignors to Snow Brand Milk Products Co., Ltd. and Anritsu Electric Co., Ltd., both of Tokyo, Japan

Filed June 20, 1972, Ser. No. 264,570
Claims priority, application Japan, Aug. 25, 1971, 46-65006; Aug. 25, 1971, 46-65007
Int. Cl. A01j 17/00; A23d 3/02; G01r 27/26
U.S. Cl. 259—7 4 Claims

1. An apparatus for continuously automatically controlling the water content of a kneaded material, comprising a kneader having a pressure-kneading portion for kneading a feed material therein and a nozzle portion connected to said pressue-kneading portion for discharging the kneaded feed material therethrough as a kneaded material, water adding means connected to said pressure-kneading portion and including a water pump capable of suppling water in a varying quantity, water content detecting means arranged in said nozzle portion and including an electrode plate comprising a single sheet of a substrate plate made of an electric insulator, a pair of electrodes printed on said substrate plate and a thin



layer of an electric insulator covering said printed electrodes, said electrode plate being placed below

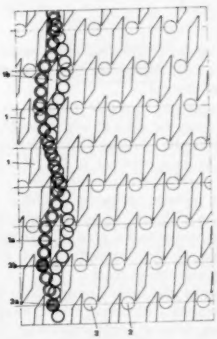
the material to be measured with said thin layer of the electric insulator in contact therewith, thereby to measure the electric capacity of said material, and means for controlling the quantity of water supplied from said water pump in accordance with the detected water content to maintain the quantity of water contained in the kneaded material constant.

3,841,611

MIXING AND KNEADING DEVICE

Fritz Ronner, Pratteln, Switzerland, assignor to Buss, A. G., Basel, Switzerland

Filed July 14, 1972, Ser. No. 271,931
Int. Cl. B01f 7/02
U.S. Cl. 259—102 1 Claim



1. A mixing and kneading device comprising:

a housing;

kneading teeth arranged on the inner wall of said housing and said teeth projecting radially inwardly;

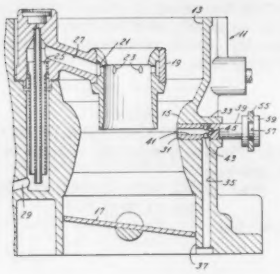
a screw shaft having a helically arranged worm thread arranged in said housing, the helical arrangement forming mixing and kneading vanes, each vane being machined with plane interacting surfaces movable along the kneading teeth in close relationship and having a cross-section of rhombus so that relief milling for closely fitting the

vanes to the kneading teeth is not necessary on said screw shaft;
means for rotating and simultaneously reciprocating said screw shaft within said housing;
said worm thread being interrupted at least four times in each turn of the shaft and the four mixing and kneading vanes thus formed being movable along said teeth;
control means for the movement of the screw shaft comprising a cam machined of rhombus form which is shaped to complement the vane shape and to provide a substantially plane interacting surface; and,
driving means for rotating and reciprocation of the shaft.

3,841,612
ALTITUDE AND TEMPERATURE COMPENSATED CARBURETOR

Richard J. Freismuth, Mount Clemens, and Albert A. Pruchno, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 8, 1973, Ser. No. 321,897
Int. Cl. F02m 7/20
U.S. Cl. 261—23 A **7 Claims**

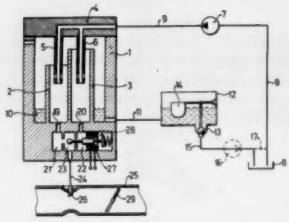


1. A carburetor for an internal combustion engine,
said carburetor including a body having an induction passage formed therein,
a restriction element movable relative to said body constructed to vary the area of said passage,
means responsive to ambient air temperature and pressure connected to said element to locate said element in a position of corresponding restriction,
said induction passage including a venturi portion,
said restriction element being immediately adjacent the minimum cross-sectional area of said venturi portion,
said restriction element comprising an elongate member having a cylindrical portion,
a bore formed in said body opening into said passage slidingly and sealingly receiving said cylindrical portion,
said restriction element being positionable to protrude from said bore into said venturi portion to reduce the effective area thereof,
said restriction element increasing its protrusion into said venturi portion in response to a decrease in the ambient air temperature or an increase in the ambient air pressure,
a booster venturi positioned within said induction passage substantially concentric with and adjacent to said first-mentioned venturi portion,
said elongate member being protrudable to reduce the effective area between an outer surface of the booster venturi and the inner surface of the first-mentioned venturi portion.

3,841,613
FUEL METERING DEVICE FOR INTERNAL COMBUSTION ENGINES

Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 1, 1973, Ser. No. 366,099
Claims priority, application Germany, July 18, 1972, 2235146
Int. Cl. F02m 7/16
U.S. Cl. 261—36 A **15 Claims**

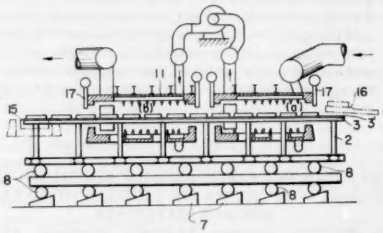


1. In a fuel metering device for an internal combustion engine wherein the fuel feed pressure of the device is determined by the static height of the fuel in a vessel from which a fuel line leads to a suction tube, the improvement comprising at least two vessels of different filling level, means for feeding fuel into each of said vessels, valve means for connecting said vessels alternatingly or simultaneously with said fuel line, and control means for actuating said valve means in dependence on characteristic data of said engine.

3,841,614
APPARATUS FOR PREHEATING STEEL INGOT OR BLOOMS BY THE USE OF HIGH-SPEED JET STREAMS AS WELL AS HEATING FURNACE USING THE SAME

Ryuzo Okuno, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Filed Dec. 6, 1972, Ser. No. 312,523
Claims priority, application Japan, Dec. 6, 1971, 46-98908; Jan. 11, 1972, 47-5669
Int. Cl. C21d 9/100
U.S. Cl. 266—5 **7 Claims**



1. A preheating apparatus for treating substances such as steel ingots, blooms, slabs, billets or the like to be treated in a reheating furnace, the improvement comprising:
a casing defining a chamber having at a first end means forming a high-speed jet zone of a hot fluid having a high temperature which has been exhausted from said reheating furnace and at a second end a convection zone connected with the said jet zone;
means for directing said exhaust gases from said reheating furnace to said jet nozzles; and

a conveyor which operates to successively feed the said substances into the said casing and to successively extract the thus treated substances from the casing,

wherein; heat transfer is conducted on the surface of the said substances by a high coefficient of heat transfer occurring on the said surface by the impingement of the said hot jet streams.

3,841,615

INSTALLATION FOR EXTRACTION OF DUST FROM FUMES EMITTED FROM A MIXER

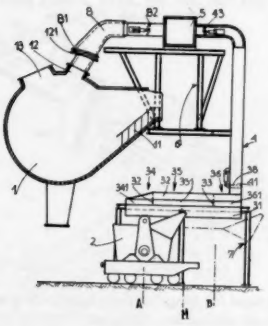
Georges Delaire, Dunkerque, France, assignor to Creusot-Loire, Paris, France

Filed Oct. 18, 1972, Ser. No. 298,517

Claims priority, application France, Oct. 27, 1971, 71.38534

Int. Cl. F27d 17/00

U.S. Cl. 266—15 6 Claims



1. Process for extraction of dust from fumes from at least one mixer comprising the steps of collecting the pouring fumes from the jet of liquid metal poured from the mixer to the ladle by a first hood positioned adjacent the ladle connected to a fan and dust separator at a predetermined first suction and simultaneously isolating a second hood positioned at the mixer for collecting the charging fumes from the mixer with respect to the fan and dust separator during the operation of collecting the pouring fumes, collecting the charging fumes at a predetermined second and different suction and simultaneously isolating the first hood with respect to the fan and dust separator.

3,841,616

PROTECTIVE ALLOY ADDITION APPARATUS

George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Filed Dec. 10, 1973, Ser. No. 422,990

Int. Cl. C21c 7/00

U.S. Cl. 266—34 T 10 Claims

1. A ladle addition apparatus suitable for installation on a refractory lined rod positioned in a ladle comprising a base member adapted for positioning on the rod, outer and inner concentric members positioned on the base member and forming a first chamber between the outer and inner members

and a second chamber radially inward of the inner member, a protecting first addition agent positioned in the first chamber and a second addition agent to be protected positioned in the second chamber.

3,841,617

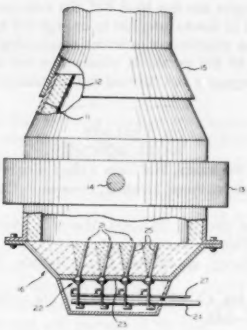
ADJUSTABLE TUYERE FOR METALLURGICAL VESSELS

Howard M. Fisher, and Harry T. Montgomery, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1972, Ser. No. 281,780

Int. Cl. C21b 7/16

U.S. Cl. 266—41 17 Claims



1. A metallurgical vessel having a refractory lining and constructed and arranged for being tilted about a generally horizontal axis, said vessel having a second axis which is generally vertical when said vessel is in an untilted position,

at least one tuyere means,

the lower end of said vessel having an opening formed therein and extending through said refractory lining, at least the inner end of said opening being substantially larger than the cross sectional area of said tuyere means,

tuyere support means mounted on the lower end of said vessel and external of said refractory lining and adjacent said opening,

said tuyere means being mounted on said tuyere support means and extending through said opening and toward the interior of said vessel,

said tuyere support means including a first portion mounted on said vessel and a second portion mounted on said tuyere, said portions being adjustably engageable relative to said vertical axis,

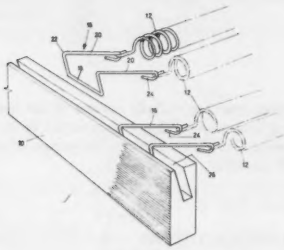
means for securing said first and second portions in each of a plurality of angular positions whereby said tuyere means may be mounted in said opening in any one of a plurality of angular positions relative to said vertical axis,

and refractory closing the remainder of said opening not occupied by said tuyere means to affix said tuyere means in its adjusted angular position and to seal said opening.

3,841,618
ANCHORS FOR SPRINGS FOR FURNITURE

Alexander Solomons, Durban North, South Africa, assignor to Grafton Furniture Manufacturers Limited, Durban, Natal, South Africa

Filed Apr. 16, 1973, Ser. No. 351,426
Int. Cl. F16f *3/00*; A47c *23/05*
U.S. Cl. 267—110 **3 Claims**

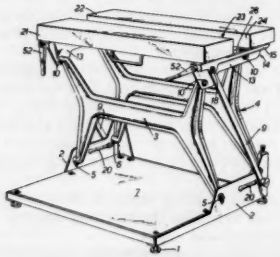


1. An article of furniture comprising a structural member to which is attached at least one coil tension spring under tension, the spring being attached to the structural member by means of an attachment member of wire and in the form of a U having a base and two arms extending from the base, the arms being cranked at points equidistant from the base of the U through angles not less than 90°, the free ends of the arms being formed as hooks adapted to engage the spring, and the portion of the attachment member comprising the base and the arms up to the points at which they are cranked being adapted to engage a slot formed in the structural member.

3,841,619
WORKBENCHES

Ronald Price Hickman, Waltham Abbey, England, assignor to Inventec International Limited, Guernsey, Channel Islands, England

Division of Ser. No. 803,600, March 3, 1969, Pat. No. 3,615,086. This application Sept. 1, 1971, Ser. No. 177,123
Claims priority, application Great Britain, Mar. 4, 1968, 10484/68
Int. Cl. B25b *1/10*; B25h *1/4*, *1/10*
U.S. Cl. 269—244 **54 Claims**



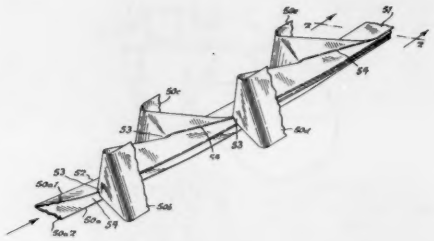
1. A collapsible workbench movable between collapsed and erected conditions, and including a horizontally extending top structure affording an upwardly facing work surface, a horizontally extending base structure adapted to rest on a supporting surface and including a load-bearing platform upon which a person can stand in front of the top structure in the erected condition, front and rear intermediate structures each interconnecting the top and base structures with the front intermediate structure adjacent the platform, the front and rear intermediate structures having hinge connections to the top and base structures along four parallel hinge axes in such a manner that the top structure folds forwardly over the platform in the collapsed condition, and bracing means at each end to maintain the said top and intermediate structures with respect to the base structure in the erected condition,

the top and base structures being capable of bearing tension and compression loads in all directions within substantially horizontal planes extending through those structures, and the front and rear structures each being capable of bearing tension and compression loads in all directions within a plane extending through that structure through the respective upper and lower hinge axes of that front or rear structure when in the erected condition.

3,841,620
WEB FOLDING APPARATUS AND METHOD

Charles A. Lee; Warren R. Furbeck, and Horace N. Kemp, all of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,994
Int. Cl. B41l *1/30*
U.S. Cl. 270—40 **17 Claims**



1. In apparatus for longitudinally interfolding a plurality of webs and for advancing the interfolded webs in a continuously moving stack along a feed path, in combination:

a plurality of folding devices mounted in spaced relationship with each other along the feed path, each of said folding devices having an infeed surface and an outfeed surface extending from and continuous with said infeed surface in the direction of movement of the stack along the feed path, said outfeed surface including a pair of gradually curved diverging folding shoulders, at least one of said folding shoulders extending at an angle from a portion of the infeed surface adjacent the feed path obliquely across at least a portion of the feed path, and outfeed surface portions extending laterally from said folding shoulders defining a concave surface, as viewed from the preceding folding device, between the folding shoulders for concavely folding the portion of a web drawn therebetween, said folding devices being disposed along the feed path so that the concave outfeed surface portion of each folding device can receive the portion of the folded web from the preceding folding device to be interfolded with the web supplied to said folding device;

means associated with each of said folding devices for guiding the portion of the folded web from the preceding folding device to be interfolded with the web supplied to said folding device into the concave outfeed surface portion of said folding device so that the folding shoulder which extends across the feed path is interposed between said portion of the folded web to be interfolded and the remainder of said folded web opposite said portion;

means for supplying a web to each of the folding devices; and

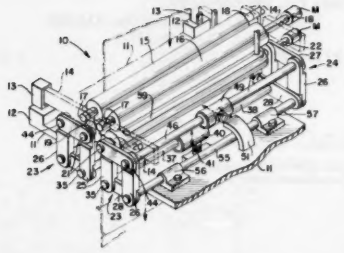
means for drawing the web supplied to each of the folding devices over the infeed and outfeed surfaces of said folding device and into the stack so that said web is folded concavely around the portion of the folded web from the preceding folding device guided into the concave outfeed surface portion of said folding device as said web passes the outfeed surface of said folding device and so that a portion of said web on the side of the fold adjacent the interposed folding shoulder is gradually interposed between the folded surfaces of the web from the preceding folding device by said interposed folding shoulder to interfold said web and the web from the preceding folding device, and a portion of the web on the other side of the fold is positioned by the other folding shoulder for guiding into the concave outfeed surface portion of the succeeding folding device.

3,841,621

APPARATUS FOR FOLDING LONG WEBS OR SHEETS OF MATERIAL

Frank H. Brown, Norwich, N.Y., assignor to Automecha, Ltd., Oxford, N.Y.

Filed June 5, 1973, Ser. No. 367,146
Int. Cl. B65h *45/70*
U.S. Cl. 270—61 F **10 Claims**



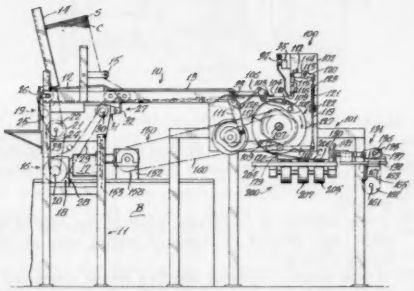
1. A folding apparatus for folding long webs or sheets of paper or other material, comprising a pair of opposed, parallel drive rollers for engaging opposite sides of a web of paper or the like to feed it between the drive rollers, a pinch roller near each drive roller and spaced closely adjacent thereto, said pinch rollers disposed in parallel, spaced apart, opposed relationship to one another on opposite sides of the web, each drive roller and associated pinch roller defining a folding zone therebetween into which said web of paper or the like is fed by said drive rollers, means adjacent the pinch roller and drive roller on each side of the web for directing a stream of air between the drive roller and pinch roller on each side of the web and against opposite sides of the web, and means connected with the pinch roller on each side of the web to move the pinch rollers in a predetermined sequence of operation against its associated drive roller to block the stream of air from impinging against a selected side of the web so that the stream of air impinging against the other side of the web deflects a portion of the web into the folding zone between the pinch roller and drive roller on said selected side, said pinch rollers movable toward one another to engage said web on opposite sides thereof to feed said deflected portion of said web between said drive roller and pinch roller on said selected side to effect folding of said web, said rollers actuatable to effect feeding of said web at various speeds and folding of the web at various intervals along its length and in alternate directions, as desired.

3,841,622

APPARATUS FOR DISPOSING THIN SHEET MATERIAL IN A SHINGLED STREAM

Kermit E. Swanson, Naperville, Ill., assignor to R. R. Donnelly & Sons Company, Chicago, Ill.

Filed Oct. 12, 1973, Ser. No. 405,915
Int. Cl. B65h *3/08, 5/24*
U.S. Cl. 271—13 **7 Claims**



1. Apparatus for removing identical rectangular sheets from a pile in a supply hopper and disposing them in a stream of precisely shingled, aligned, individual sheets, said apparatus comprising, in combination:

a sheet supply hopper which is adapted to accommodate a small pile of sheets, said hopper having a floor, and a front wall against which the leading end of the pile abuts, there being a space between the floor and the front wall so the leading end portion of the pile is unsupported;

a shaft which is beneath said hopper, parallel to said front wall, and substantially in the vertical plane of the unsupported forward end portion of the pile;

a transfer drum on said shaft, said drum being adapted to receive sheets seriatim from the bottom of said pile at the top of the cylinder of revolution of the drum and deposit them at the bottom of said cylinder of revolution;

means for driving said shaft to rotate the drum so its surface moves forwardly with respect to the hopper in the upper portion of said cylinder of revolution;

means for withdrawing sheets seriatim from the bottom of the pile by moving their leading end portions downwardly into engagement with the drum;

sheet receiving endless belt conveyor means which has an upper run immediately beneath the drum, said conveyor means having a line of travel parallel to the drum shaft; means for driving said conveyor means at a speed which is so related to the rate of rotation of the drum that the conveyor belts move a very small fraction of the length of a sheet for each half revolution of the drum, whereby successive sheets deposited on the upper run of the conveyor means trail one another by a distance equal to said very small fraction;

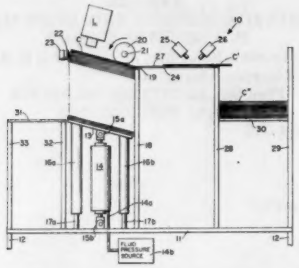
fixed stop means alongside the conveyor means and positioned to be abutted by the leading ends of the sheets as the sheets are deposited by the drum;

and jogger means for jogging the deposited sheets against the stop means, whereby said sheets are precisely aligned along the belt conveyor means.

3,841,623
SHEET FEEDING AND LABELING APPARATUS

Charles J. McCarthy; Jerome P. McCarthy, and Robert F. McCarthy, all of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Feb. 28, 1972, Ser. No. 230,022
Int. Cl. B65h *1/16, 3/06*
U.S. Cl. 271—126 2 Claims



1. An apparatus for feeding articles such as knocked-down containers, sheets or the like in spaced relationship from a stack thereof comprising:

a. a frame;

b. a stop attached to said frame, adjacent one edge of said stack, and adapted to engage a leading edge of each article being fed;

c. a fluid pressure cylinder actuated means connected to said frame for continuously elevating said stack at a predetermined constant rate thereby allowing said articles to individually clear said stop, said rate being the only control of the feeding rate of like articles;

d. a controllable fluid pressure source connected to said cylinder whereby said predetermined constant rate may be established;

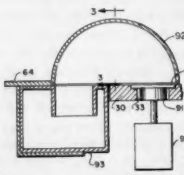
e. a resilient roll including a shaft, said roll being adapted to rotate in contact with the uppermost article in said stack as it rests against said stop and to frictionally engage and feed said article as it rises above said stop; and

f. a means connected to said frame and said shaft for driving said roll.

3,841,624
TICKET READER

Pierre G. Foret, Sudbury, and John William Donohoe, Natick, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 56,281, July 20, 1970, Pat. No. 3,689,065.
This application Mar. 20, 1972, Ser. No. 236,510
Int. Cl. B65h *29/00*
U.S. Cl. 271—180 7 Claims

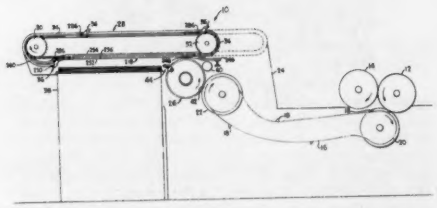


1. In a ticket reading system having a plurality of stations one of said stations being an ejection station, a rotary turret having a plurality of ticket receivers about a top surface thereof, means for rotating said turret and stopping said turret at said stations, each of said ticket receivers shaped to receive a ticket for retention therein and each of said ticket receivers having an opening therein extending from a bottom surface thereof to a bottom surface of said turret, ejecting means positioned at said ejecting station and having an ejecting head positioned below said turret bottom and movable to extend into said opening by first extending through the opening at the turret bottom to engage a ticket supported by the bottom of the ticket receiver, vacuum means coupled to each of said ticket receivers for producing suction to retain tickets in said receiver, hood means positioned at least in part above said turret and at said ejecting station with a portion thereof located so that a ticket receiver may be positioned therebelow when the turret is stopped to position one of said ticket receivers at said ejecting station, means for deactivating said vacuum means to permit said ticket to be supported by said ticket receiver bottom without suction applied thereto when said ticket receiver is positioned and stopped at said ejecting station, and control means providing an actuating signal to said ejecting means after suction has been removed and said ticket receiver is positioned and stopped at said ejection station to cause said ejecting head to extend through said opening by entering from the bottom of the turret to engage a surface of a ticket supported by the bottom of the ticket receiver and propel it into free flight against the hood thereabove so as to deflect it away from said ticket receiver.

3,841,625
METHOD AND APPARATUS FOR DELIVERING SHEETS

Guy V. Carricato, Pittsburgh, Pa., assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 334,981
Int. Cl. B65h *29/28*
U.S. Cl. 271—182 7 Claims



1. A sheet delivery mechanism for delivering sheets from a printing unit to a pile comprising,

a first endless conveyor having sheet engaging means thereon,

an intermediate transfer cylinder rotatably mounted between said first endless conveyor and a pile of sheets, said intermediate transfer cylinder having sheet engaging means thereon,

said sheet engaging means includes sheet front edge engaging devices and sheet tail edge engaging devices,

a second endless conveyor having sheet engaging means thereon positioned adjacent to said intermediate transfer cylinder and in overlying relation with said pile,

said first endless conveyor sheet engaging means arranged to engage the front edge of a sheet and convey said sheet from a printing unit to said intermediate transfer cylinder, said intermediate transfer cylinder arranged to transfer the front edge of the sheet from said first endless conveyor to said second endless conveyor sheet engaging means,

said second endless conveyor sheet engaging means arranged to engage the front edge of said sheet and convey the sheet into overlying relation with said pile,

said intermediate transfer cylinder arranged to engage the sheet front edge transferred from said first endless conveyor sheet engaging means with said sheet front edge engaging devices and transfer said sheet front edge to said second endless conveyor sheet engaging means while said sheet tail edge remains engaged by said intermediate transfer cylinder sheet tail edge engaging devices, and

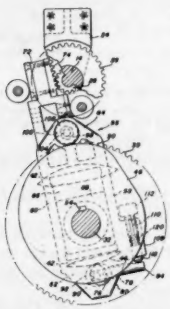
means to release said sheet front edge from said second endless conveyor sheet engaging means while said sheet tail edge remains engaged by said intermediate transfer cylinder sheet tail edge engaging means.

3,841,626

SHEET FEEDING APPARATUS

Willi Weisgerber, Johannisberg, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 336,967
Int. Cl. B65h *5/06*; F16h *25/14*
U.S. Cl. 271—268 **7 Claims**



1. In a sheet feeding apparatus the combination comprising,

a first shaft member rotatably supported in a frame portion,

a gear non-rotatably mounted on said first shaft and arranged to rotate said shaft at a preselected velocity,

a first cam member non-rotatably secured to said first shaft for rotation therewith,

a second cam member non-rotatably secured to said first shaft for rotation therewith,

a rack actuator positioned between said cam members and arranged to reciprocate relative thereto,

said rack actuator having a first cam follower positioned in overlying relation with a cam surface of said first cam member,

said rack actuator having a second cam follower positioned in overlying relation with a cam surface of said second cam member,

means to urge both of said cam followers against said respective cam surfaces of both of said cam members,

a second shaft member rotatably supported in said frame portion with feed rolls non-rotatably mounted thereon,

said second shaft having a drive pinion non-rotatably mounted thereon, and

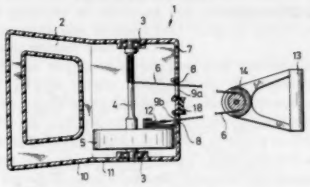
a gear rack secured to and extending from said rack actuator in meshing relation with said pinion gear so that upon reciprocation of said rack actuator said pinion gear and said second shaft oscillate said feed rolls.

3,841,627

PUSH PULL ROTATABLE WHEEL TYPE EXERCISING DEVICE

Heinz Vetter, Hanover, Germany, assignor to Heimsport GmbH, Hannover, Germany

Filed Jan. 8, 1973, Ser. No. 321,735
Claims priority, application Germany, Mar. 3, 1972, 2210249
Int. Cl. A63b *21/06, 23/04*
U.S. Cl. 272—79 R **11 Claims**



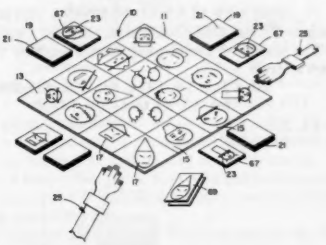
1. A gymnastic apparatus comprising a closed housing, a shaft journaled in said housing, a single weighted mass means mounted on the shaft which offers resistance to rotation by an exerciser, said shaft having a traction rope wound thereon, said mass means being mounted on said shaft at one end thereof, said shaft having a maximum diameter of 0.455 inches, the traction rope engaging with one of its ends the opposite end of the shaft, the other end of the rope being attached to the housing, an independent housing having mounted therein a handle for gripping and pulling during an exercise, said independent housing having at least one roller, said rope being guided over said at least one roller, said shaft being provided at one of it's ends with a collar which is larger in diameter than the shaft, and the transition from the shaft to the collar being substantially concave.

3,841,628

GAME APPARATUS AND METHOD

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Jan. 31, 1972, Ser. No. 222,123
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **9 Claims**



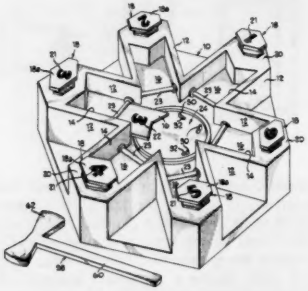
1. A game comprising:

playing board means comprised of a plurality of differing playing areas,

at least two playing elements each having a first portion capable of being held by a player and a second portion adjacent said first portion capable of removably adhering to said board means when a player strikes said board means with said second portion of said element, said second portion of said element having a configuration such that, when said second portion of one of said playing elements adheres to said board means, a second portion of another of said playing elements is capable of remov-

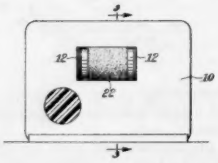
ably adhering to said second portion of said one playing element,
and separate means for randomly indicating the playing areas of said board means.

3,841,629
GAME APPARATUS
Gordon A. Barlow, Skokie, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 29, 1972, Ser. No. 310,334
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R **16 Claims**



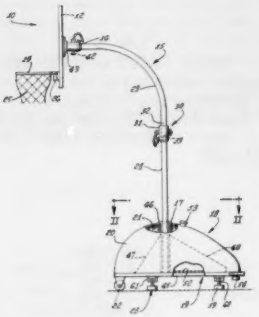
1. Game apparatus comprising: a supporting frame structure including a central playing area; a plurality of indicating means angularly disposed around the playing area each movable generally radially between a first position substantially within said playing area and second position substantially outside of said playing area representing indicating and non-indicating positions, respectively; individual actuating means for each of said indicating means; and means operatively associating each actuating means with its respective indicating means so as to always move the indicating means from one of said rest positions back to the other whenever the respective actuating means is selectively actuated by a player of the game whereby each indicating means may be moved back and forth between said positions on successive actuations of the respective actuating means.

3,841,630
HOCKEY PLAYER TRAINING DEVICE
Fernando Renna, Galt-Cambridge, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 14, 1974, Ser. No. 433,089
Int. Cl. A63b 69/00, 71/08
U.S. Cl. 273—1 B **3 Claims**



1. A device used in training hockey players comprising:
a thin vertical horizontally elongated rectangular rigid plastic member;
handle means secured to one major surface of the member;
a thin rubber sheet secured to the opposite major surface of the member and having upper and lower horizontally elongated edges shaped to define guides, the lower edge being relatively thick; and
a thin vertical horizontally elongated rectangular resilient flexible plastic plate detachably engaging the rubber sheet and slidably held in place by the guides.

3,841,631
PORTABLE BASKETBALL BACKSTOP CONSTRUCTION
Edward M. Dolan, 458 Hawthorne St., Glendale, Calif. 91204
Filed July 9, 1973, Ser. No. 377,556
Int. Cl. A63b 63/02
U.S. Cl. 273—1.5 R **5 Claims**

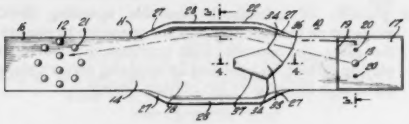


1. A base means for movable apparatus used in games and physical training, comprising:
a frame means comprising a rigid plate having a curvilinear periphery,
an upstanding hollow socket member secured to a central area of said plate,
gusset members extending between said socket members and plate for fracing said socket member,
said socket member providing an attachment means to a piece of athletic equipment;
and a hollow container means of resilient material on said plate and having an outer surface extending upwardly from the peripheral edge of the plate and converging at the top of the socket member,
said container means enclosing said socket and gusset members,
the container means being adapted to be filled with liquid to stabilize and fix said base means and associated equipment at a selected location,
the outer surface of the container means above the plate being curvilinear, spaced from the gusset members, and providing a resilient surface adapted to be contacted by and yieldable under a players body without harm or injury thereto.

3,841,632
BOWLING TYPE GAME
Carl Schwartz, 5123 Surf Ave. Sea Gate, Brooklyn, N.Y. 11224
Filed July 2, 1973, Ser. No. 376,104
Int. Cl. A63d 1/00
U.S. Cl. 273—39 **8 Claims**

1. A game comprising an alley defining longitudinally extending flat topped base having distal and proximate sections at opposite ends thereof, substantially coextensive banking walls extending along opposite longitudinal edges of said base and including similar confronting outwardly curved concave

inside faces, a plurality of target elements resting on said base distal section, a projectile propellable along said base from said proximate section toward said distal section and an obsta-



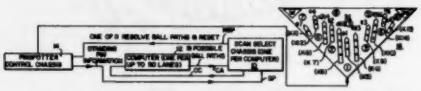
cle located on said base intermediate said banking walls and delineating with said banking walls a pair of opposite passageways of greater width than said projectile.

3,841,633

BOWLING BALL PATH INDICATOR

Richard David Walsh, York, and James Edward Baugher, Biar, both of Pa., assignors to AMF Incorporated, White Plains, N.Y.

Filed May 18, 1973, Ser. No. 361,820
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 D **13 Claims**



1. In a computerized optimum ball path indicator for bowling alleys including a pinspotter, a pinspotter mask having selectively illuminated ball path arrows thereon, selective control means for said arrows and computer means responsive to pins left standing after the bowling of a first ball in a bowling frame to logically select one or more appropriate ball paths to knock down the combination of standing pins from a first plurality of appropriate ball paths, the improvement comprising:

scan sequence selector means responsive to said appropriate ball paths selected by said computer means;

said selector means having a first plurality of ball path inputs equal in number to said first plurality of appropriate ball paths for receiving an input signal corresponding to those ball paths selected by the computer means;

a second plurality of intermediate ball path outputs representative of a lesser number of optimum ball paths than said first plurality of appropriate ball paths;

logic means interconnecting said first plurality of appropriate ball path inputs with said second plurality of intermediate outputs, each of said first plurality of inputs having a series connected sequencing switch between it and said logic means;

a plurality of optimum ball path relay means corresponding one to each of said second plurality of intermediate outputs;

a control output from said logic means common to said inputs and a first control relay controlled thereby;

cancel and set sequence switch means and latching relay means controlled thereby to unlatch and latch, respectively;

computer call input means and a second associated control relay means actuated in response to a call signal from said computer means, said second control relay means selectively interconnecting said SET SEQUENCE switch means in circuit with said latching relay means;

third control relay means controlled by said latching relay means, selectively completing a circuit between said latching relay means, selectively completing a circuit between said common control output and said first control relay means and selectively, in conjunction with said first control relay means, enabling said optimum ball path relay means;

fourth control relay means selectively initially controlled by said latching relay means and subsequently held in by said computer call input means in response to a call signal;

reset relay means selectively controlled by said latching and fourth control relay means;

pinspotter reset output means selectively controlled by said reset relay means;

optimum ball path output means corresponding in number to said plurality of optimum ball path relay means and corresponding one to each said ballpath arrows on said pinspotter means; and

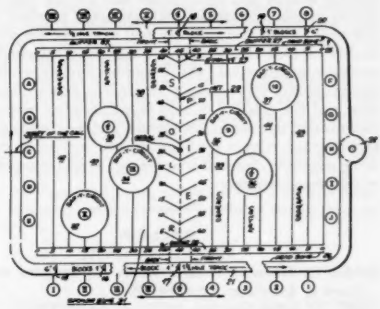
driving means sequentially closing and opening said sequence switch means continuously in predetermined sequence to thereby scan, in each said sequence, each of said first plurality of appropriate ball paths inputs, constrain said latching and control relay means to CANCEL a present sequence and SET said scan sequence selector means for a subsequent sequence, and effect energization of one of said optimum ball path output means and its associated ball path arrow in response to the first occurrence in said scan sequence of a said input signal on a said one of said first plurality of ball path inputs.

3,841,634

BALL FIELD AND GAME EQUIPMENT

Dennis A. Mavrofrides, Haverhill, Mass., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 18, 1974, Ser. No. 434,597
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 H **10 Claims**



1. A field game, comprising

a field area of substantially rectangular configuration enclosed by a track path and divided into two courts;

a plurality of fling tubes, mitts, hard hats and body protecting equipment one of each adapted to be used by a corresponding one of the players;

a fling ball adapted to be thrown by the players via the fling tubes;

six hurdles placed in the track at desired locations;

a loop at one point of the track to separate and reverse runners;

a pair of buffers;

a pair of entrance corridors each for a corresponding court and each leading runners from a buffer to the track and from the track to the buffer of the opposing court;

a pair of dead zones each located between a corresponding one of the buffers and the track;

a net stretched across the field area and dividing it into two courts;

a pair of spoiler zones each extending along a corresponding side of the net; and

three spaced circular areas in each court.

3,841,635

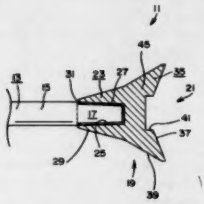
TIP FOR TOY ARROWS

Rollin V. Wilson, 4205 Long Leaf Dr., Memphis, Tenn. 38117

Filed Sept. 14, 1973, Ser. No. 397,395

Int. Cl. A63b 65/02; F41b 5/02

U.S. Cl. 273—106.5 A 5 Claims



1. An improvement in a tip for a launchable toy of the type having an elongated shaft including a rearward end for releasably engaging propulsion means and a forward end with said tip being attached thereto, and said tip including flexible resilient suction cup means; wherein said improvement comprises anti-grip means for causing said suction cup means to collapse inwardly when manually pinched while attempting to pull said tip from said shaft, the perimeter of said suction cup means being circular, said cup means including a concavo-convex lip, said anti-grip means including an annular portion of said concavo-convex lip defining concentric socket means recessed into the concave surface thereof for weakening the circular wall of said lip to cause said suction cup means to readily collapse inwardly when manually pinched while attempting to pull said tip from said shaft said tip including a double tapered shank member integrally attached to said suction cup means, said shank member being provided with a tapered socket for receiving the tapered forward end of said shaft and the exterior of said shank member being tapered towards said tapered socket therein, and the convex surface of said concavo-convex lip being frustro-conical in shape and being angularly disposed with respect to said tapered exterior of said shank member.

3,841,636

VIBRATORY GAME

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 29, 1973, Ser. No. 419,960

Int. Cl. A63f 9/00

U.S. Cl. 273—110 6 Claims

1. A game apparatus, comprising:

a support frame;

a relatively stiff, resilient sheet member supported by the frame defining a playing surface;

vibratory means associated with the playing surface for imparting vibrations thereto;

a plurality of playing pieces at least one for each player of the game and adapted for movement over said playing surface in response to the vibrations imparted thereto; and

a plurality of individually operable upsetting devices mounted on the support frame for operation by players of the game and movable into positions relative to said playing surface for upsetting an opposing player's playing piece as it moves over the playing surface.

3,841,637

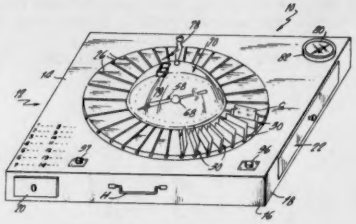
PLAYING CARD SELECTION APPARATUS

Nicholas F. Piazza, 13 Alpine Way, Huntington Station, N.Y. 11746, and Vincent Stano, 13 Leaf Ln., Levittown, N.Y. 11756

Filed May 7, 1973, Ser. No. 357,819

Int. Cl. A63f 1/06, 5/04

U.S. Cl. 273—141 A 9 Claims



1. Apparatus for use in the selection of playing cards comprising a base, a card holder and a card indicator, said card holder including equidistant circumferentially spaced means for receiving a plurality of playing cards in a generally upstanding attitude and being mounted for rotation in at least one direction with respect to said base, said card indicator including a designating end and being mounted for rotation in a direction opposite to said one direction with respect to said base and being constructed and arranged with respect to said card holder in a manner that said designating end passes proximate to said playing card receiving means for use in designating a playing card, and means for concurrently imparting opposite rotational motion to said card holder and said card indicator with respect to said base.

3,841,638

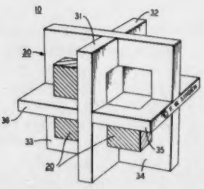
SLIDABLE BLOCK PUZZLE

Frank W. Sinden, 106 Maple St., Summit, N.J. 07901

Filed Mar. 14, 1973, Ser. No. 341,077

Int. Cl. A63f 9/08

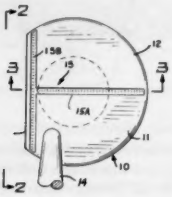
U.S. Cl. 273—153 S 9 Claims

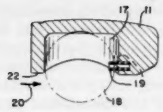


1. A mechanical puzzle comprising a plurality of blocks contiguously contacting one another within a space greater than that defined by said plurality; and a frame comprising longitudinal members, each member having a longitudinal

dimension and a width perpendicular to said longitudinal dimension less than the maximum dimensional measurement of any block, said members being disposed with their widths covering edges where said blocks are in contact with one another such that portions of said blocks away from said edges are not obscured thereby.

3,841,639
GOLF BALL RETRIEVING CLUB
Frank D. Werner, Box S. R. 9, Jackson, Wyo. 83001
Filed Aug. 30, 1972, Ser. No. 284,746
Int. Cl. A63b *53/04*
U.S. Cl. 273—162 E **2 Claims**





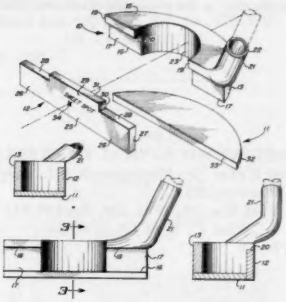
1. A golf putter construction comprising a head and a shaft attached to said head, said head having a golf ball engaging face surface, a bottom surface, a cavity formed in said bottom surface, said cavity being defined by a peripheral wall surface of such size as to surround portions of a golf ball and being open in direction to permit entry of a golf ball into said cavity from the bottom of said head, a flexible, bendable, elastomeric resilient tubular element positioned on a portion of said peripheral wall surface of said cavity, means mounting said tubular element comprising an aperture located in said portion of said peripheral wall surface and opening to said cavity, said tubular element being retained partially in said aperture with a portion of said tubular element projecting into said cavity, said tubular element having open ends defined by a bore extending from end to end, said bore having its longitudinal axis positioned substantially parallel to a plane tangent to the bottom of said head and normal to said golf ball engaging face surface, said resilient tubular element being of such size as to engage a golf ball inserted into said cavity, said resilient tubular element being sufficiently resilient so the end thereof projecting into the cavity flattens when a golf ball is inserted into said cavity and said tubular element urges a golf ball in the cavity to engage a portion of said peripheral surface on a side of said cavity opposite from said resilient tubular element to retain a golf ball in said cavity.

3,841,640
GOLF PUTTER
Leo P. Gaulocher, Phoenix, Ariz., assignor to James T. Hunter, Glendale, Ariz.
Filed Aug. 3, 1972, Ser. No. 277,807
Int. Cl. A63b *53/04*
U.S. Cl. 273—164 **6 Claims**

1. In a golf putter, a head comprising:

a. a main solid body portion having an undersurface, a top surface, a rear segmental, cylindrical surface extending between said top and under surfaces and defined by a diameter substantially the same as that of a standard putting green cup, a pair of spaced substantially flat, coplanar face sections between which opens a recess defined by a segmental, cylindrical surface of a diameter substantially the same as that of a standard golf ball, a flange extending forwardly of each of said face sections and presenting a shoulder overhanging each of said sections, the top surface of said flanges being an extension of said top surface of said body portion, and a hosel integrally joined to said body at the top surface thereof;

b. an elongated substantially flat face plate having a finished front face with a sweet spot and a rear flat surface, a pair of wings, each of said wings having a top edge surface which engages said overhanging shoulders, said rear flat



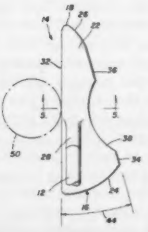
surfaces of each wing being in face-to-face engagement with said face sections, and a central portion upwardly extending from said top edge surfaces and upwardly extending between said flanges and being flush with the side surfaces of said flanges, said face plate and the front surfaces of said flanges being substantially coplanar and forming the front face of said putter;

c. a sole plate having a rear segmental, cylindrical surface of the same diameter as that of the rear surface of the body with which it aligns and a straight front edge surface below said face sections, and

d. means securing said body portion, face plate and sole plate in assembled relation,

said body and face plate being related so that a vertical plane bisecting said segmental, cylindrical surfaces passes through said sweet spot.

3,841,641
PUTTER
Richard C. Bennett, 7333 Armitage, Elmwood Park, Ill. 60635
Filed Aug. 31, 1972, Ser. No. 285,228
Int. Cl. A63b *53/00*
U.S. Cl. 273—164 **12 Claims**



1. A putter for use on a putting green, comprising a shaft having an axis, a head at one end of said shaft, said head

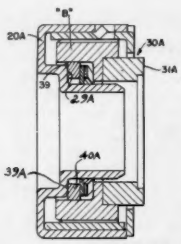
including a front face for striking a golf ball and two pivot points opposite said front face, there being a first predetermined angle between said front face and a straight line through said pivot points, said head including a bottom surface having a portion which is tangent to an imaginary surface that coincides with the surface of the putting green when the putter assumes a predetermined ball-addressing position, there being a second predetermined angle between the axis of said shaft and a normal to said imaginary surface, said first and second predetermined angles being substantially equal and being substantially greater than zero degrees, whereby said putter is used by first positioning it in a prone position so that said pivot points are on the green and said shaft is aligned with a proposed direction of travel of a golf ball and then pivoting said putter about said pivot points to said predetermined ball-addressing position in which said bottom surface portion is on the green, thereby automatically causing said front face to be perpendicular to the proposed direction of travel of said golf ball.

3,841,642

ROTARY MECHANICAL FLUID SEAL

Alton Everett Kirker, Jr., Narragansett, R.I., assignor to Sealol, Inc., Warwick, R.I.

Filed May 28, 1971, Ser. No. 147,957
Int. Cl. F16j *15/40, 15/54*
U.S. Cl. 277—40 **2 Claims**



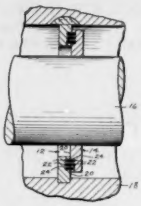
1. A rotary mechanical fluid seal, adapted to cooperate with a rotating member, consisting of a housing having an inner shell provided with a shaft opening, a spacing collar having a front surface, means fastening said spacing collar to said inner shell in fluid tight relationship, a primary sealing ring provided with a sealing face, a circular recess, a wall and an axial bore, means slidably fastening said primary sealing ring to said housing, a secondary sealing ring having an outside surface and a rear surface, means slidably engaging said outside surface with said circular recess in fluid tight relationship, spring means interposed between said wall and said secondary sealing ring urging said rear surface into engagement with said front surface in fluid tight relationship, in which said means slidably fastening said primary sealing ring to said housing consists of an outer shell having a pair of lugs fastened to said outer shell, said sealing ring being provided with a plurality of slots said pair of lugs slidably engaing a pair of slots selected from said plurality of slots to removably fasten said sealing ring to said housing said housing having a pair of detent slots, a retaining ring having a central opening, a pair of prongs, with each prong having a detent projection, said sealing ring face projecting through said central opening with said pair of prongs located in a pair of slots selected from said plurality of slots and with said detent projections removably engaging said detent slots to thereby provide a unitary structure.

3,841,643

SEAL FOR BEARINGS AND SIMILAR ROTATING MEMBERS

Neil J. McLean, Rt. 3, Box 467B, Plymouth, Ind. 46563

Filed Jan. 21, 1972, Ser. No. 219,656
Int. Cl. F16j *15/40, 15/48*
U.S. Cl. 277—57 **7 Claims**



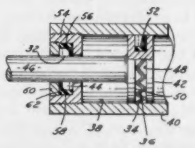
1. A seal for use between components experiencing relative revolving movement comprising a first seal part adapted to be secured to one of the components and a second seal part adapted to be secured to the other of the components, said seal parts having confronting continuous faces with at least one face being shiftable over the other face during revolving movement of said components, the face of the first seal part having a continuous groove formed therein, the face of said second seal part including means cooperating with said groove to form a continuous slot between said faces, an elongated flexible strip positioned loosely between each of said seal parts and fitting within and extending entirely around said slot, said strip having overlapping ends and a width sufficient to overlap portions of said first and second seal parts in all operative positions of the seal.

3,841,644

LOW FRICTION SEALING RING

Charles S. White, 35815 42nd St. East, Palmdale, Calif. 93550

Continuation-in-part of Ser. No. 316,844, Dec. 28, 1972, which is a continuation-in-part of Ser. No. 76,110, Sept. 28, 1970, abandoned. This application Feb. 14, 1973, Ser. No. 332,419
Int. Cl. F16j *15/00*
U.S. Cl. 277—158 **7 Claims**

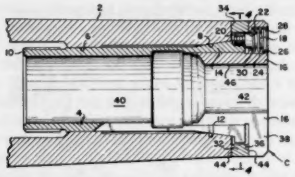


1. A low friction sealing ring comprising: an annulus having a continuous peripheral edge formed of a continuous helical winding of bondable low friction thread impregnated with a bonding resin cured to a solidifed matrix bonding the thread turns to each other, and said annulus having radially extending corrugations rendering the annulus radially expansible and contractible to closely conform to a cylindrical surface against which the peripheral edge of the annulus is adapted to bear to form a seal therewith.

3,841,645
THROUGH HOLE MACHINE TOOL COLLET

Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers Inc., Elmira, N.Y.

Filed Oct. 4, 1972, Ser. No. 295,017
Int. Cl. B23b *31/20*
U.S. Cl. 279—1 A 34 Claims

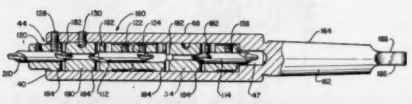


1. A working gripping device for a machine tool spindle comprising:
   a. a collet for mounting on said spindle, said collet comprising a tubular member having a plurality of longitudinally extending furcations,
   b. said collet having an axial passageway therethrough,
   c. insert means mounted in said collet passageway,
   d. said insert means having a work receiving passageway therethrough substantially coaxial with said collet passageway,
   e. said insert means including work engaging means forming at least a portion of said work receiving passageway, and f. spring means resiliently connecting said insert means and said collet,
   g. said insert means including spindle engaging abutment means extending radially beyond said collet so that said abutment means contacts said spindle when said collet is closed,
   h. said spring means being positioned radially outward from said work receiving passageway.

3,841,646
INTERCHANGEABLE TOOL MOUNTING DEVICE

Gene Lee Bennett, North Madison, Ohio, assignor to Genio Tools, Inc., Mentor, Ohio

Continuation-in-part of Ser. No. 183,090, Sept. 23, 1971, Pat. No. 3,754,767. This application Apr. 16, 1973, Ser. No. 351,163The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.
Int. Cl. B23b *29/00*, *29/26*
U.S. Cl. 279—14 11 Claims

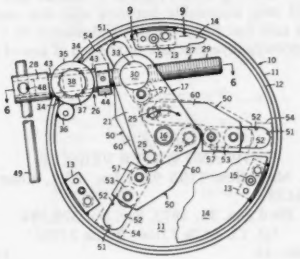


1. A tool holder comprising; an elongated substantially cylindrical body member having opposite end portions and a longitudinal axis, a bore extending substantially coaxially into said body member from one of said end portions thereof, mounting means on said body member for mounting said body member to a machine, a plurality of substantially cylindrical tool holders having longitudinal axes and opposite tool holder end portions, tool holder bores extending substantially coaxially into said opposite tool holder end portions, each of said tool holder bores having a different diameter, said tool holders being receivable in said bore in said body member with said longitudinal axis of said body member substantially coincidental with said longitudinal axes of said tool holders, each of said tool holders having a substantially common predetermined length and opposite ends, said bore in said body member having a bottom, releasable securing means for securing one of said tool holders in working position within said bore in said body member with one of said ends of said one tool holder extending outwardly from said bore in said body member and the other of said ends positioned in said bore in said body member, the distance from said other end of said one tool holder to said bottom of said bore in said body member being at least as great as said predetermined length of said tool holders, said mounting means comprising an elongated tapered mounting shank extending coaxially of said body member from the other of said end portions thereof.

3,841,647
SELF-CENTERING CHUCK MECHANISM

Cleveland N. Cooper, Kirkwood, Mo., assignor to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Jan. 10, 1973, Ser. No. 322,378
Int. Cl. B23b *31/16*
U.S. Cl. 279—110 8 Claims



1. In a chuck mechanism:
   a. a frame including pivot means defining an axis,
   b. a slide member being connected to a pivot means and the slide member being rotatable about the axis of said pivot means,
   c. means on said frame for guiding said slide member,
   d. said pivot means and said guide means cooperating to support said slide member on the frame for reciprocative and rotary movement relative thereto,
   e. a jaw carried by the slide member,
   f. an actuator mounted to the frame for oscillative movement about the frame pivot means axis and including pivot means defining a pivot axis spaced from the frame pivot means axis, and
   g. link means interconnecting said actuator pivot means to said slide member pivot means or reciprocative movement of the slide member and jaw toward and away from the frame pivot means axis and for rotational movement of the slide member and jaw about the slide member pivot means axis as the actuator oscillates.

3,841,648
SKI TIE

Charles M. Meyer, Littleton, Colo., assignor to Colorado Ski Area Equipment Company, Denver, Colo.

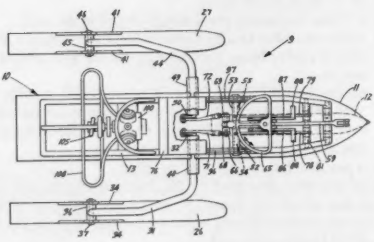
Filed Feb. 5, 1973, Ser. No. 329,448
Int. Cl. A63c *11/02*
U.S. Cl. 280—11.37 A 1 Claim

1. A tie for binding a pair of skis to each other in bottom-to-bottom spaced relationship comprising an elongate strip of a material whose characteristics are flexibility, inextensibility and strength with said material remaining substantially constant over the range of temperatures to which the skis would

normally be subjected, said strip having a length equal to approximately 3 ½ times the sum of the width plus thickness of a typical ski with a first section being disposable between the bottoms of said skis to be tied together to maintain the same in spaced relationship to one another, first and second substantially flat mating portions of a hook and loop-type fabric fastening material, means securing the first fastening material portion to one side of said strip at the end thereof

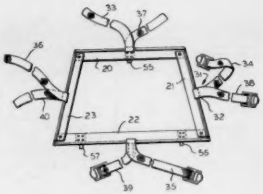
opposite to said first section, and means securing the second fastening material portion to the opposite side of said strip at a location spaced from the opposite end of said strip by between one-third and one-half of the length of said strip so that said second fastening means portion is outside said first section of said strip disposable between said skis and can be mated with said first fastening material portion in a substantially flat unobstructive juncture on the top of one of said skis.

3,841,649
SNOW AND WATER VEHICLE
Wayne W. McMullen, 1103 93rd Ln. N.W., Coon Rapids, Minn. 55433
Filed Jan. 31, 1973, Ser. No. 328,394
Int. Cl. B62b *13/00;* **B62m** *27/00*
U.S. Cl. 280—16 **16 Claims**



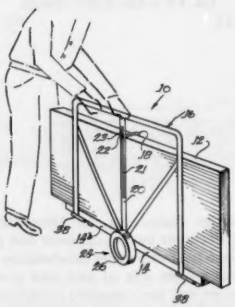
1. A vehicle for travel over snow and water including:
a buoyant hull;
a plurality of generally horizontal lifting support means assembled to the hull to provide lifting support to the hull, including a pair of side lifting support members symmetrically positioned on either side of the hull;
linkage means interconnecting the plurality of support means;
first extension and retraction means associated with the linkage means operable to selectively simultaneously extend the lifting support means and retract the lifting support means relative to the hull; and
second extension and retraction means associated with the linkage means operable to selectively extend one side lifting support member relative to the hull and to retract the other side lifting support member relative to the hull to impart directional control to the vehicle.

3,841,650
LUGGAGE CARRIER
Robert A. Miskelly, 10853 S. Harlem, Worth, Ill. 60482
Filed June 25, 1973, Ser. No. 372,979
Int. Cl. B62d *21/18*
U.S. Cl. 280—37 **10 Claims**



1. A luggage carrier comprising four elongated strut-like structural members, at least two of said members being of equal length and at least one of different length than said two equal length members, means for removably joining the ends of said equal length members with the other two of said members such that the other two of said members are in a spaced parallel relationship to either form a dimensionally stable symmetrical frame or a knock down kit for easy packing, means attached to each structural member for attaching said carrier to only one of the sides of a piece of luggage, at least two wheel means attached to at least one of said other structural members in positions for moving the luggage when the assembled frame is in position on the one side of the luggage, and means whereby the silhouette of said luggage carrier is reduced without removal from said side for shipment with the luggage.

3,841,651
WHEEL MOUNTED, SUPPORT PLATFORM HAND TRUCK
Stephen W. Bigney, Spring Valley, Star Rt., Mayer, Ariz. 86333
Filed July 19, 1973, Ser. No. 380,705
Int. Cl. B62b *7/02*
U.S. Cl. 280—47.16 **2 Claims**



1. A wheel mounted, support platform hand truck for carrying articles, such as building sheet material, comprising in combination:
an elongated support plate forming a carrying surface of said wheel mounted, support platform hand truck, said elongated support plate being a channel having first and second elongated side portions depending therefrom,

a frame member secured to said first elongated side portion of said elongated support plate, said frame member extending upwardly from said elongated support plate a distance sufficient to allow building sheet material to be transported thereby to have the upper edge thereof rest against said frame member,

a primary journalled roller member secured beneath said elongated support plate with the journal axis perpendicular to the sides of and substantially centered along the length of said elongated support plate, said primary roller member comprising a pair of wheels disposed on opposite sides of said support plate, thereby providing means to enable the transport of said wheel mounted, support platform hand truck from place to place, and a terminally-hooked locking bar adjustably secured to a vertically-slotted elongated guide member which is secured to said frame member and to said first elongated side portion of said support plate with the slot being in a vertical position substantially directly above said primary roller member when said elongated support plate is horizontal, said locking bar being vertically movable in the slot of said slotted guide member and adapted to be locked in place at the desired elevation to hook the building sheet material and thereby hold it firmly in place on the elongated support plate and against said frame member, a pair of spaced secondary roller members secured beneath said elongated support plate and located substantially at the terminating ends of said elongated support plate, the lowermost points of said secondary roller members being higher than the lowermost point of said primary roller member when the carrying surface of said elongated support plate is horizontal above a floor surface on which said primary roller member rests, said secondary roller members providing means for maintaining said wheel mounted, support platform hand truck in an easily balanced condition while moving a quantity of building sheet material secured thereto.

3,841,652

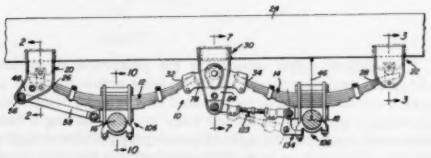
TANDEM AXLE SUSPENSION ASSEMBLY

Roy C. Higginson, Poplar Bldg., Crystal Springs Apts. No. 204, Atglen, Pa. 19365

Filed Mar. 10, 1972, Ser. No. 233,487

Int. Cl. B60g *5/06*

U.S. Cl. 280—104.5 B **16 Claims**



1. A spring suspension assembly for tandem axles, comprising, in combination:

a. a pair of leaf springs, each arranged for mounting an axle;

b. a pair of spring hangers mountable on a vehicle frame and arranged for receiving ends of said leaf spring; and

c. equalizer means arranged between said spring hangers for receiving ends of said springs opposite those ends received by said hangers for supporting a vehicle load exerted through the springs and transmitting force applied to one axle to the other axle, said equalizer means including an equalizer beam receiving the spring ends and provided with a transverse hole, a pin arranged in said transverse hole, and means for engaging said pin and preventing movement of said pin about an axis parallel to said transverse hole and said pin, said equalizer means further including an equalizer bracket mountable on a vehicle frame, and means for removably connecting said beam to said bracket, and wherein said means for preventing includes at least one flat surface provided on a portion of said pin which extends beyond said beam, and a means mounted on said bracket for retainingly engaging said flat surface when said beam and bracket are connected together.

3,841,653

STABILIZATION MEANS FOR MOTOR VEHICLES

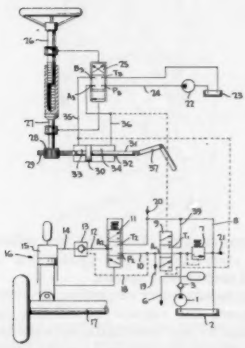
Gunther Strauff, Kaarst, Germany, assignor to Langen & Co., Dusseldorf, Germany

Filed June 15, 1972, Ser. No. 263,098

Claims priority, application Germany, June 16, 1971, 2129846

Int. Cl. B60g *21/06*

U.S. Cl. 280—124 F **9 Claims**



1. A stabilization device for motor vehicles provided with a hydro-pneumatic suspension system and a level-regulating device which, depending on the distance between wheel supports and a vehicle body, in a first control position supplies pressure medium from a pressure source into a working space of at least one resilient element mounted between the wheel supports and the vehicle body, and in a second control position, removes pressure medium from the working space, while in a third control position which is in accordance with the level position, blocks the working space, a hydraulic servo-steering device provided with a pressure source, a control valve and a servo-motor whereby a change-over valve with an influencing effect on the level-regulation is activated during operation of the steering device, the improvement comprising said change-over valve being series-connected with the level-regulating device so that in a first position in accordance with driving along straight roads, the level-regulating device functions normally while in a second position during driving along curving or winding roads, the effect of the level-regulating device is suspended whereby the switching of the change-over valve from the first into the second position is effected hydraulically via the assistance of the pressure-difference or the pressure-increase which develops within the servo-steering device during driving on curving or winding roads.

3,841,654

VEHICLE SAFETY SYSTEM

Donald J. Lewis, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 290,917

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **16 Claims**

1. A vehicle safety system comprising:

a seat belt having an inflatable section thereof which is

adapted to be positioned about a wearer when the wearer is seated in a seat in the vehicle, said inflatable section being in the form of a hollow tube normally longitudinally folded and maintained in an uninflated state,

frangible fastening means normally maintaining said inflatable section in said uninflated state, said fastening means being breakable in response to inflation to permit unfolding of said inflatable section;

sensing means responsive to a preselected condition of the vehicle;

inflating means capable of inflating said inflatable section;

electrical connecting means connecting said inflating means and said sensing means;

said inflating means being responsive to actuation of said sensing means and capable of inflating said inflatable section prior to any substantial forward motion of the wearer relative to his seat as a result of said preselected condition; and

said inflatable section upon inflation, expanding radially outward towards said wearer and contracting longitudinally, whereby said wearer is pressed rearwardly in his seat prior to any substantial forward motion.

3,841,655

SPRING SUSPENSION FOR MOTOR VEHICLE AXLES

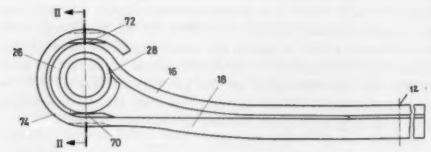
Friedrich Schaeff, Benshein-Auerbach, Germany, assignor to Otto Sauer Achsenfabrik, Keilberg uber Aschaffenburg, Germany

Continuation-in-part of Ser. No. 214,221, Dec. 30, 1971. This application June 1, 1973, Ser. No. 366,007

Claims priority, application Germany, June 19, 1972, 2229663

Int. Cl. B60g *11/12*

U.S. Cl. 280—124 R **11 Claims**



1. In a spring suspension for an axle of a motor vehicle having a chassis and an axle body spaced therefrom, the spring suspension comprising:

A. a hinge means secured to said chassis on either side of the longitudinal central axis of the vehicle, each said hinge means including a pivot pin defining an axis normal to said central axis; and

B. an axle bracket situated on either side of the longitudinal central axis of the vehicle and extending in the length dimension thereof, each axle bracket having:

1. a first or conventional leaf spring of constant moment of resistance along its effective length, said conventional leaf spring forming at one end thereof an eye which surrounds a respective one of said pivot pins, and being attached through said eye to said hinge means for pivotal motion about the normal axis associated with said respective one of said pivot pins; and

2. a second or parabolic leaf spring of decreasing moment of resistance along its length towards said hinge means, said parabolic leaf spring forming at one end thereof an eye which envelops the eye of its respective conventional leaf spring in such a way that at least a horizontal clearance is established, so that, in the length dimension of the vehicle, a shift of said parabolic spring in said hinge means is permitted in response to torsional forces acting about the length dimension of said axle bracket, said parabolic spring transmitting in said hinge means vertically directed forces,

the improvement in each axle bracket comprising support surfaces formed on the eye of said parabolic leaf spring, with said support surfaces abutting against the eye of said conventional leaf spring.

3,841,656

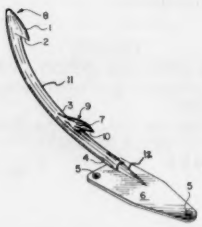
VEHICLE CABLE CUTTING DEVICE

Kenneth D. Kramb, and Walter J. Isabell, both of Kalamazoo, Mich., assignors to K. I. C. Incorporated, Kalamazoo, Mich.

Filed Nov. 13, 1972, Ser. No. 305,838

Int. Cl. B60r *19/00, 21/00, 27/00*

U.S. Cl. 280—150 R **4 Claims**



1. A vehicle safety device for the protection of vehicle occupants against a strand of cable, lying across the path of vehicle travel adapted to be mounted on a vehicle, comprising an integral generally elongated body member having a base and an arcuately curved upwardly-sweeping portion, snagging means comprising an integral hook-type cutter having a cutting edge at the inward part of the upwardly-sweeping extremity thereof, said base constituting mounting means for securing said safety device on a vehicle.

3,841,657

VEHICLE OCCUPANT-RESTRAINT ARRANGEMENTS

Bruno Ewert, and Gunter Stein, both of Russelsheim/Main, Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1973, Ser. No. 331,056

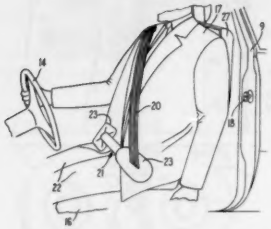
Claims priority, application Germany, Feb. 15, 1972, 2207091

Int. Cl. A62b *35/00*

U.S. Cl. 280—150 SB **11 Claims**

1. In a motor vehicle having a floor and a vehicle seat secured to said vehicle floor, an occupant-restraint arrangement comprising a support means secured to said floor adjacent an

inboard side of said seat, a curved occupant-restraint member having a free end and an end pivotally mounted to said support means about a pivot axis substantially parallel with the longitudinal axis of the vehicle, said member being movable about said pivot axis between an occupant-restraint position, in which the free end of the member serves as a lap restraint for an occupant of the seat, and a non-restraint position; a flexible shoulder belt having one end attached to the free end



of the curved member and having another end attached to an anchorage so that the belt is adapted to serve as a shoulder restraint for said occupant when the curved member is in the occupant-restraint position; and a locking device for locking the curved member against pivotal movement from its occupant-restraint position in response to shoulder belt tension caused by forward movement of the occupant as the rate of vehicle movement changes abruptly.

3,841,658

SEAT BELT SYSTEM

Harkrishan Singh, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1973, Ser. No. 428,528

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 S B **5 Claims**

1. A seat belt system for a vehicle seat having a substantially horizontal seat cushion, comprising:

grommet means flushly mounted in the seat cushion,

a buckle device having a latch mechanism,

boot means encasing the buckle device,

the encased buckle device in unbuckled condition of the seat belt system being loosely held by its own weight within the grommet means and being secured to one end of a fixed length seat belt segment,

anchor means securing the other end of the fixed length seat belt segment to a vehicle floor member beneath the seat, the fixed length seat belt segment being of sufficient length to provide a predetermined amount of slack therein when the buckle device is contained within the grommet means,

and an elongated tongue means carried on at least one seat belt segment connected to a retractor mechanism,

the elongated tongue means being insertable into the grommet contained buckle device for latching engagement therewith,

the buckle device when latched to the tongue means being partially extractable from the grommet means in response to retractor force transmitted through the retractor mechanism connected seat belt segment,

the extent of buckle device extraction being controlled by the slack in the fixed belt segment and being sufficient to provide access to the buckle device latch mechanism for release of the latter.

3,841,659

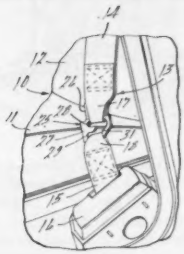
VEHICULAR THREE-POINT SEAT BELT SYSTEM

Richard E. Peel, Farmington Hills, and Harkrishan Singh, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1973, Ser. No. 428,529

Int. Cl. B60n *21/10*

U.S. Cl. 280—150 SB **6 Claims**



1. A vehicular three-point seat belt system comprising separate shoulder and lap belt sections each having a looped terminal end connected to a common tongue element,

the tongue element having a main plate portion and an elongated buckle engageable portion,

the main plate portion having a multi-section aperture therein comprising spaced slot sections connected at corresponding terminal ends by an angular slot section,

the spaced slot sections extending laterally to a longitudinal axis of the elongated buckle engageable portion,

in non-user position each belt section having its looped terminal end encircling a wall of one of the respective slot sections with the elongated buckle engageable portion of the tongue element being substantially concealed within one of the looped terminal ends,

and in user position the buckle engageable portion of the tongue element being exposed for insertion into a buckle upon relative movement of the one belt looped terminal end to the angular slot section of the tongue element aperture.

3,841,660

PICK-UP TRUCK RAIL ASSEMBLY AND TIE-DOWN DEVICE

Bob R. Clark, 6641 Hammond, Long Beach, Calif. 90805

Filed Dec. 18, 1972, Ser. No. 316,117

Int. Cl. B60p *7/00*

U.S. Cl. 280—179 R **5 Claims**

1. In combination with a hollow sidewall of a bed of a pickup truck, which sidewall includes an upper elongate flange in which a plurality of longitudinally spaced rectangular openings are formed that are each partially defined by a transversely spaced, longitudinally extending pair of downwardly extending ribs, a rail assembly, that may be removably secured in a longitudinally extending position to said flange, said assembly including:

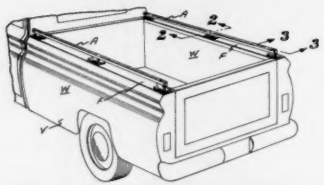
a. a rigid rail that has a generally U-shaped inverted transverse cross section and includes two laterally spaced,

downwardly extending sides, which on the lower free ends thereof define two short first legs that extend inwardly towards one another, with said rail including an upper portion in which a plurality of longitudinally spaced first bores are formed that are vertically aligned with said openings in said flange when said rail is disposed in a longitudinal position thereabove;

b. first longitudinally extending means inside said rail that removably rest on said legs, said first means having a plurality of second bores formed therein longitudinally aligned with said first bores;

c. a plurality of hollow, longitudinally spaced supports, each of which supports have upper and lower edges, with a portion of said upper edges of each of said supports abutting against said legs, and with the hollow interior of each of said supports being in vertical alignment with said second bores;

d. second longitudinally extending means that rest on said flange and have a plurality of third bores formed bores therein vertically aligned with said second bores, said



second means being of greater width than that of said openings;

e. a plurality of elongate threaded rods that have protuberances on first ends thereof that are of greater transverse cross section than that of said first bores, said protuberances resting on said first means, and said rods extending downwardly through said first, second and third bores to below said flange, each of which protuberances include tool engageable means thereon; and

f. a plurality of rectangular, rigid adapter plates of greater width than said openings disposed in said sidewall below said openings, each of said adapter plates having a pair of spaced recesses therein that can engage said ribs, said adapter plates having centered tapped bores therein that engage said threaded rods, and with said rail assembly being rigidly secured to said flange when each of said threaded rods is rotated in a direction to force said first means into pressure contact with said legs, said legs into pressure contact with said supports, said supports into pressure contact with said second means, said second means into pressure contact with said flange, and said adapter plate into pressure contact with said ribs.

3,841,661

CARGO TRANSPORTER HAVING DOOR-OPERATED CARGO RETAINER

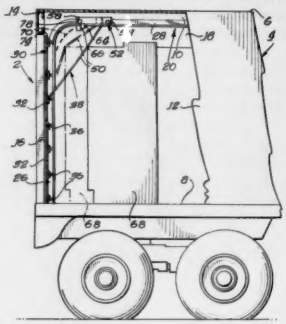
Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer, Inc., Monon, Ind.

Filed May 23, 1973, Ser. No. 363,093

Int. Cl. B60p *7/00*

U.S. Cl. 280—179 R **8 Claims**

1. A cargo transporter having a body with a cargo space, means defining an opening into said cargo space, a door for said opening, said door being movable to and from a closed generally vertical position across said opening to an open generally horizontal position, said door having a plurality of hinged together sections, trackway means movably mounting said door sections, said door defining a boundary in said cargo space along which the door moves during opening and closing thereof, which boundary is at least in part spaced from the door when the door is in its closed position, a cargo retainer extending across at least a substantial portion of the width of the door, and means securing said cargo retainer in a cargo-retaining position in said cargo space to prevent cargo in the



cargo space from encroaching said boundary when the door is in its closed position and operable upon moving said door from its closed position to its open position for shifting said cargo retainer out of cargo retaining position to a position over said cargo space.

3,841,662

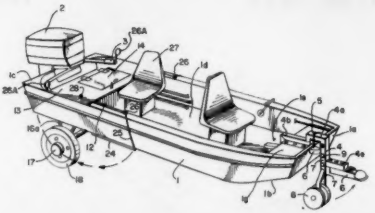
BOAT-TRAILER

James A. Howell, 3152 Ford Rd., Memphis, Tenn. 38109

Filed Sept. 21, 1973, Ser. No. 399,628

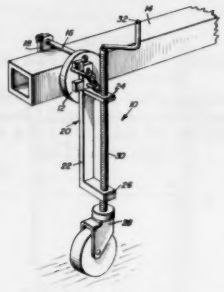
Int. Cl. B60p *3/10*; **B63c** *13/00*

U.S. Cl. 280—414 A **10 Claims**



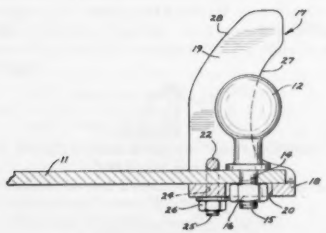
1. A boat-trailer, comprising a boat hull having a bow and having a substantially rectangular opening extending across its bottom adjacent the stern of the hull; a built-in hitch projecting beyond the bow; a yoke horizontally pivoted on the hitch and carrying a ground-engaging wheel adapted to be pivoted to bring the wheel from lowered ground-engaging position into raised inoperative position; means for preventing pivoting of the yoke; a substantially rectangular watertight well within the hull across said opening having front and rear walls respectively; a U-shaped frame horizontally pivoted along the rear wall of the well and having parallel legs which may be swung from a position within the well to a position below the opening; a horizontal axle journaled in the said legs; rear ground wheels carried by the axle; articulated arms connecting the front wall of the well with the legs respectively; and stiffening sleeves slidable on said articulated arms adapted to be positioned over at least two adjacent articulations of the arms to maintain the rear ground wheels in lowered ground-engaging position, said sleeves when shifted to overlie only one of the articulations permitting the arms to fold and foreshorten whereby the frame, wheels and articulated arms may be raised into housed position within the well.

3,841,663
RETRACTABLE TRAILER TONGUE STAND
John D. Proffit, 1808 Dawson Rd., Clarksville, Tenn. 42240
Filed Jan. 10, 1973, Ser. No. 322,550
Int. Cl. B60d 1/14
U.S. Cl. 280—475 7 Claims



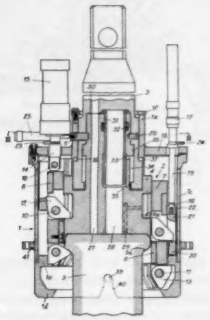
1. A retractable stand for trailer tongues, said stand comprising a mounting plate adapted to be fastened to a trailer tongue, a pivot pin attached to said mounting plate and defining a pivotal axis, an elongated support member with longitudinal peripheral surfaces and a longitudinal slot near one end, said slot cooperating with said pivot pin, said support member being movable selectively between first and second angular positions about said pivot pin, and a pair of spaced stop members affixed to said mounting plate and spaced apart from each other to define a keyway of sufficient dimension to snugly receive said support member therebetween when in said first position, and said stop members each further snugly engaging the longitudinal peripheral surfaces of a common side of said support member when said support member is in said second position, thus preventing movement when in said first and second positions.

3,841,664
TRAILER HITCH GUARD
John H. Anderson, P.O. Box 254, Prior Lake, Minn. 55372
Filed Mar. 8, 1973, Ser. No. 339,295
Int. Cl. B60d 1/06
U.S. Cl. 280—507 4 Claims



1. A guard for shielding a trailer hitch ball mounted in upright position on a draft bar at the rear of a draft vehicle comprising, a U-shaped member having a horizontal bight portion connecting a pair of upright guard plates, means for integrally securing the bight portion to the draft bar with the guard plates disposed one on each side of the hitch ball and extending upwardly beyond the top of the hitch ball, the said securing means being independent of the mounting of the hitch ball on the draft bar, and the rear edges of the guard plates being concavely curved to provide swinging clearance for a trailer tongue connected to the hitch ball.

3,841,665
SYSTEM FOR CONNECTION OF TWO IMMERSED CONDUITS
Lucien Capot, Eysines, France, assignor to Subsea Equipment Associates Limited (SEAL), Hamilton, Bermuda
Filed May 4, 1973, Ser. No. 357,138
Claims priority, application France, June 9, 1972, 72.20868
Int. Cl. F16l 35/00
U.S. Cl. 285—2 12 Claims

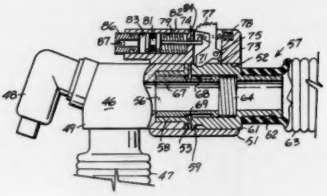


1. A coupling connector for joining a first conduit, such as an immersed undersea well head, to a second conduit, such as a riser, comprising:
   a. a generally cylindrical skirt assembly surrounding and connected to the second conduit and adapted to be lowered over the first conduit,
   b. a locking coupling mounted within the skirt assembly, and comprising:
      1. upper and lower locking cam segments
      2. first and second jack cylinder means mounted to the skirt assembly and having reciprocable actuating arms,
      3. a first ring member coupled to the actuating arms of the first jack cylinder means,
      4. means mounting the upper and lower cam segments to the first ring member for rotation about generally horizontal axes, and
      5. a second ring member coupled to the actuating arms of the second jack cylinder means and positioned to rotate the upper cam segments upon movement through actuation of the second jack cylinder means,
   c. a camming surface on the skirt assembly positioned to rotate the lower cam segments upon movement of the first ring member through actuation of the first jack cylinder means,
   d. a support surface on the first conduit positioned to be engaged by the lower cam segments upon rotation thereof, and
   e. a support surface on the second conduit positioned to be engaged by the upper cam segments upon rotation thereof,
   f. the upper and lower cam segments urging their respective support surfaces in opposite, converging directions upon rotation to thereby press the first and second conduits together.

3,841,666
QUICK RELEASE HARNESS
John A. Gaylord, San Diego, Calif., assignor to H. Koch & Sons, Inc., a division of Global Systems, Anaheim, Calif.
Division of Ser. No. 187,803, Oct. 8, 1971, Pat. No. 3,767,143.
This application May 16, 1973, Ser. No. 360,811
Int. Cl. F16l 35/00
U.S. Cl. 285—33 4 Claims

1. A separable oxygen connecting device of the character described, including,
a hollow connector body,

an oxygen supply tube connected to said hollow body,
one end of said hollow body being open and forming a pocket,
a tubular connector plug insertable in said pocket and connectable to a conduit leading to another conduit,
resilient means to normally urge said plug out of said pocket,



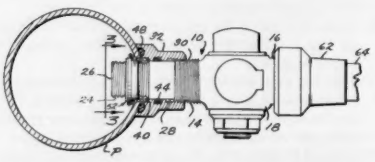
a manipulable element in said body engageable with said plug to secure said plug within said pocket,
pressure medium operated means for moving said manipulable element out of engagement from said plug for permitting said resilient means to eject said plug from said pocket thereby to disconnect said oxygen connector.

3,841,667

NON-TAPPING SERVICE LINE CONNECTION FITTING

Robert E. Sands, Shelbyville, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Dec. 15, 1972, Ser. No. 315,461
Int. Cl. F16l *55/00*
U.S. Cl. 285—39 **12 Claims**



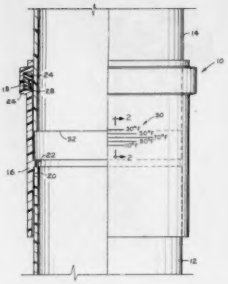
1. A fitting for coupling a service line to a fluid distribution pipe having an opening therein, said fitting comprising a body member having an inlet portion with an end for insertion into the opening in said pipe and an outlet portion for connection to the service line, said body member having a flow passage extending therethrough between said inlet portion and said outlet portion, a saddle member having a bore therethrough and having an end surface surrounding said bore which is complementary to the exterior surface of the pipe surrounding the opening therein, said saddle member being carried on said inlet portion for relative movement axially thereof, a counter bore in the end surface of said saddle member, a cylindrical sleeve having an exterior diameter less than the diameter of the opening in the pipe and arranged to be received in said counter bore, and expander means carried on the end of said inlet portion of said body member for flaring said sleeve outwardly when said inlet portion is moved axially outwardly of said saddle member, said expander means being adjustably carried on said inlet portion, said expander means being a frusto-conical ring threadedly carried on the end of said inlet portion and having a maximum diameter greater than the interior diameter of said sleeve but less than the diameter of the opening in said pipe.

3,841,668

PIPE COUPLING

Robert M. Williams, Davison, Mich., assignor to Genova, Inc., Davison, Mich.

Filed May 21, 1973, Ser. No. 362,065
Int. Cl. F16l *55/00*
U.S. Cl. 285—93 **5 Claims**



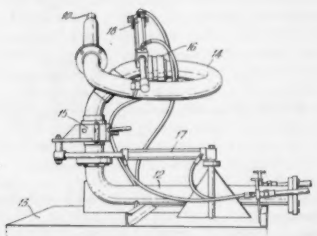
1. A coupling for connecting two pipes comprising a transparent cylinder which has an integral bore interrupted between its ends by a radially inwardly directed shoulder so that one of said pipes can be inserted into one end of the bore and secured therein in engagement with said shoulder, said bore having adjacent to its other end a radially inwardly opening sealing ring groove, and a seal ring in said groove so that the other of said pipes can be inserted into the other end of the bore in an axially movable and sealed relationship and the end of the second pipe will be visible through the transparent cylinder to indicate its position, said seal ring being visible through the transparent cylinder to allow inspection for proper position of the seal ring before and after insertion of said other pipe.

3,841,669

SWIVEL JOINTS FOR PIPES

William George Luke, and David Pender Datson, both of Cornwall, England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed June 14, 1973, Ser. No. 369,835
Claims priority, application Great Britain, June 14, 1972, 27888/72
Int. Cl. F16l *17/00*
U.S. Cl. 285—98 **13 Claims**



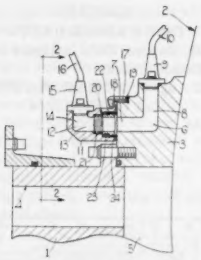
1. A swivel joint for pipes, comprising an annular sleeve connectible to the end of one of two pipes to be pivotally joined, an annular bush adapted to be secured to the end of the other pipe, the bush being arranged coaxially with the sleeve, one within the other, and the bush affording at least one recess, at least one annular bearing member of a solid

bearing material located in the recess, and means for retaining the bearing member and the two pipes in their relative axial positions, the bearing member having bearing thrust faces for sustaining radial and axial thrust, which faces bear rotatably against corresponding thrust faces of the sleeve, the bearing member being adapted to sustain axial thrust in both axial directions.

3,841,670
APPARATUS FOR CONNECTING PIPES TO AN AIRCRAFT ENGINE

Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 7, 1972, Ser. No. 269,888
Int. Cl. F16l *39/00*
U.S. Cl. 285—101 **8 Claims**



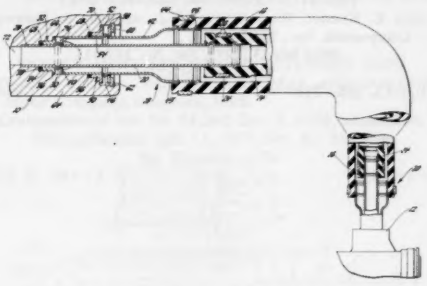
1. An apparatus for making a plurality of simultaneous pipe connections to an aircraft engine, comprising a mounting trunnion for the engine, a first annular member fixedly attached to the trunnion and the engine and including a plurality of first through passages, a plurality of pipes sealingly extending from one end of each of said first passages, said first passages having open ends lying on a pitch circle about the axis of the trunnion, a second annular member surrounding said trunnion and adapted to engage the first annular member and having a plurality of second through passages, a plurality of pipes sealingly extending from one end of each of said second passages. said second passages being disposed so that their other ends align, in use, with the open ends of corresponding first passages, sealing means at the mating faces of the first and second passages and clamping means to urge the first and second annular members together and to simultaneously connect the plurality of said first passages with the plurality of said second passages.

3,841,671
COAXIAL FLUID LINES WITH PLUG-IN CONNECTOR ASSEMBLIES

Frank H. Walker, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1973, Ser. No. 410,982
Int. Cl. F16l *39/00*
U.S. Cl. 285—133 R **3 Claims**

1. A fluid transmitting system for a fluid unit comprising a fluid unit inner and outer flexible hose means providing separate fluid flow passages, connector assembly means coupling said hose means to said fluid unit, said connector assembly means comprising first pipe means operatively connected to said inner hose means and extending from one end thereof, said first pipe means having first outwardly extending rib means, first and second retainer means disposed on opposite sides of said first rib means, first annular fluid seal means disposed around said first pipe means disposed adjacent to one end of said first retainer means to trap said first retainer means against said first rib means, second pipe means disposed around said inner pipe means operatively connected to said outer hose means and extending from one end thereof, said second pipe means having outwardly extending second rib means, third and fourth retainer means disposed on opposite sides of said second rib means, second annular fluid seal

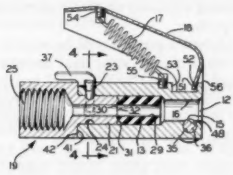


means disposed around said second pipe means to trap said third retainer means against said second rib means, and fastener means secured to said fluid unit abutting said fourth retainer means and holding said outer pipe means in abutting relationship with said second retainer means thereby holding said connector assembly in said fluid unit.

3,841,672
TUBE COUPLING FOR SMOOTH WALLED TUBES

Carl D. Schultz, New Riegel; Robert D. Simonton, and Clyde W. Stiger, both of Fremont, all of Ohio, assignors to Dale Products, Inc., Fremont, Ohio

Filed Mar. 2, 1973, Ser. No. 337,660
Int. Cl. F16l *55/00*
U.S. Cl. 285—175 **20 Claims**



1. A tube coupling comprising a barrel having a bore at one end, an uninterrupted smooth walled right-circular cylindrical tube received in said bore, a generally right-circular cylindrical grip pin, said barrel having a bore for reception of said grip pin intersecting said tube receiving bore whereby said pin when mounted in said grip pin receiving bore is spaced from said diametrically opposed tube receiving bore wall less than the diameter of the smooth walled right-circular cylindrical tube which said bore is adapted to receive, said grip pin being mounted in said grip pin receiving bore for rotation about its longitudinal axis, said grip pin when mounted in the grip pin receiving bore with a first angular position about its axis having a region in registry with said tube receiving bore which clears said tube receiving bore, a grip element on said grip pin associated with said bore clearing region of said pin with said grip element engaging with said smooth walled right-circular cylindrical tube inserted in said tube receiving bore, means in said barrel for resiliently biasing a tube inserted in said tube receiving bore toward said one end, said grip element engaging a smooth wall portion of said smooth walled right-circular

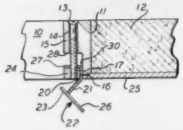
cylindrical tube inserted in said tube receiving bore when said element is over center of said grip pin longitudinal axis toward said biasing means whereby said biasing means tends to increase the gripping force on a tube in said tube receiving bore while displacing said tube toward said one end.

3,841,673

POSITIVE CLAMPING SERVICE UNIT

John E. Kohaut, West Orange, N.J., assignor to Raceway Components, Inc., Linden, N.J.

Filed May 3, 1973, Ser. No. 357,011
Int. Cl. F16l *5/00*
U.S. Cl. 285—210 **5 Claims**



1. A positive clamping service unit comprising a body member to be clamped within an apertured portion of a structural member on rotation of a bolt member freely in apertured stud in said body member, said unit comprising:

a. a clamping tab having an elongated planar spring body portion,

b. a lip portion extending from the upper end of the body portion and angularly directed inwardly relative thereto,

c. a lower end portion depending from said body portion and angularly inwardly directed relative thereto and defining, with said planar body portion and said upper lip portion thereof, means for registering a nut to be engaged by said bolt on rotation of the bolt,

d. a clamping bar portion connected to the lower end of the angularly directed inwardly extending portion of said body member,

e. said bar portion having an inwardly extending lip portion to be engaged by the bolt member when the latter is rotated in said apertured stud,

f. said bar having a further portion extending rearwardly of said body portion,

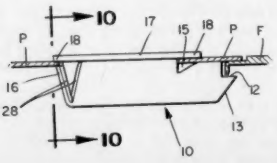
whereby said rearward portion will be moved upwardly into clamping relation with the structural member adjacent the aperture, to clamp the unit body in said apertured portion of the structural member on rotation of said bolt member and engagement of said nut member therewith and engagement of said plate portion of the tab therewith.

3,841,674

SLAM-LATCH

Robert H. Bisbing, Springfield, and James H. Vickers, Ridley Park, both of Pa., assignors to Southco, Inc., Lester, Pa.

Filed May 23, 1973, Ser. No. 363,070
Int. Cl. E05c *1/10*
U.S. Cl. 292—175 **6 Claims**



1. A latch of the sliding-action slam type for installation in an opening in a door panel, said latch comprising:

a. a latch body having a shaped recess at its forward end for receiving cooperatively the forward edge of the panel opening;

b. said latch body having a flexible leg element at its rearward end, the upper end of said leg element being spaced from the main portion of said latch body and adapted to flex forwardly during snap-in insertion of the latch body into the panel opening and to thereafter snap back into a position to retain the latch body in the panel opening;

c. said latch body having also a frame-engaging latching portion at its forward end; and

d. spring means for biasing said latch body forwardly toward latching position;

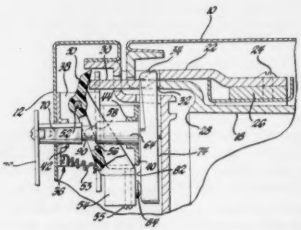
e. said spring means comprising an additional metallic spring component carried by said latch body in the space between said flexible leg element and the main portion of said latch body, said metallic spring component being shaped to engage the rearward edge of the panel opening.

3,841,675

DISHWASHER LATCH

Robert L. Mercer, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1973, Ser. No. 386,960
Int. Cl. E05c *3/14*
U.S. Cl. 292—241 **2 Claims**

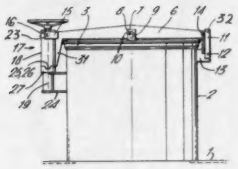


1. A combination latch and switch actuating mechanism for a dishwasher having a tub and a door hingedly mounted with respect to said tub for closing an access opening in the tub, said mechanism comprising an actuator plate adapted to be affixed to said tub adjacent said access opening and a latching assembly adapted to be affixed to said door, said actuator plate having a tongue and a strike, said latching assembly having a latch shaft rotatably mounted with respect to said door, a latch handle affixed on one end of said shaft outside said door for rotating said shaft, a latch cam affixed on the other end of said shaft for rotation with said shaft, and a pawl mounted for pivoting about an intermediate pivot point thereof with respect to said shaft and said door and having a switch actuator mounted thereon on one side of said pivot point adjacent said latch cam and normally pivotally spaced sufficiently therefrom when said door is open to prevent actuation thereof, said pawl on the other side of said pivot point adapted to engage the tongue of said actuator plate when said door is closed thereby to pivot said pawl about said pivot point in one direction to place said switch actuator in a position sufficiently close to said latch cam to enable the actuation of said switch actuator by said latch cam when said shaft is rotated, said shaft having an annular groove and a locking channel thereon and said pawl having a lock pin thereon adjacent said shaft, said lock pin pivotally movable between a position in said groove to permit rotation of said shaft when said door is closed and a position in said locking channel to prevent rotation of said shaft when said door is open, said latch cam having a first cam portion lockingly engageable with said strike and a second cam portion actuatingly engageable with said switch actuator when said door is closed and said shaft is rotated.

3,841,676
MANHOLE CLOSING ARRANGEMENT

Nils Th. Hover, Bygdoy Alle 98, Oslo, Norway

Filed Oct. 31, 1972, Ser. No. 302,394
Int. Cl. E05c 15/00
U.S. Cl. 292—256.5 6 Claims

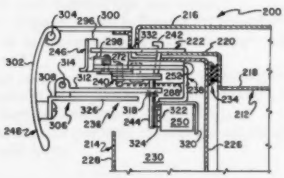


1. A closing arrangement for manholes and similar hatches defined by a coaming, comprising a yoke extending across said coaming, a cover suspended from said yoke and being adapted to be pressed by said yoke downwardly against said coaming, one end of said yoke being detachably connected with said coaming by means of a horizontally pivotable catch, the other end of said yoke being connected to said coaming by means of a pair of interengaged sliding elements respectively connected to said coaming and to said yoke, said elements being vertically and angularly movable relative to one another thereby permitting a raising, lowering and angular movement of said yoke and said cover.

3,841,677
COMBINATION LATCHING AND SWITCHING MECHANISM

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 19, 1972, Ser. No. 254,863
Int. Cl. E05c 5/02
U.S. Cl. 292—335 4 Claims

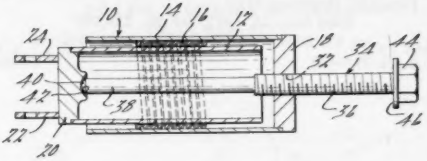


1. In a combination latching and switch operating mechanism for a cabinet or the like of the type provided with an access opening and a closure therefor having an air passage therethrough and a front panel providing an opening to the air passage, including a latching bolt on the closure and a strike on the cabinet for cooperation therewith; toggle means mounting the bolt for movement between latched and unlatched positions relative to the strike; an electric switch disposed in fixed position relative to the toggle means; means for operating the switch to a certain electric circuit condition upon predetermined movement of the toggle means in a latching direction; lockout means for securing the toggle means against movement in the latching direction; means for operating the lockout means to effect securement thereof when the bolt is withdrawn from the strike; and means for actuating the lockout means to free the toggle means upon movement of the bolt into a position relative to the strike permitting the bolt to enter into latching relation therewith whereby the switch may then be operated to its certain electric circuit condition; the improvement comprising bolt operating means including a handle; means pivotally mounting the handle on the door downwardly extending from the horizontal over the front panel opening for movement between latching and unlatching positions; the link, operatively connected to the handle for movement relative thereto, extending through the front closure panel opening and operatively connected to the toggle means for transmitting latching and unlatching movement of the handle into corresponding movement of the bolt.

3,841,678
ENERGY ABSORBER HAVING EXTENSION JACK

William J. Clemens, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 94,364, Dec. 2, 1970, abandoned.
This application Apr. 12, 1973, Ser. No. 350,435
Int. Cl. B60r 19/04
U.S. Cl. 293—1 5 Claims

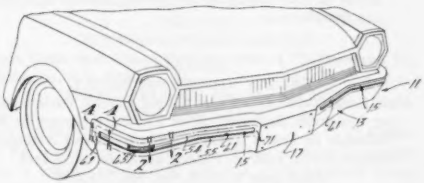


1. An energy absorber comprising first and second telescopically related cylindrical members, energy absorbing means interposed between said members, said cylindrical members being displacable relative to each other from an extended position to a collapsed position, said energy absorbing means being constructed to absorb energy as said cylindrical members move from said extended position to said collapsed position, screw jack means constructed to move said cylindrical members from said collapsed position to said extended position, each of said cylindrical members having a closure member, said screw jack means being interposed between said closure members and threadedly engaging one of said closure members, said screw jack means being rotatable whereby said cylindrical members are displaced from said collapsed position to said extended position.

3,841,679
RESILIENT BUMPER ASSEMBLY

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1972, Ser. No. 233,985
Int. Cl. B60r 19/08; E04c 2/44; E04f 19/02
U.S. Cl. 293—63 6 Claims



1. Means for retaining a flexible trim strip within a resiliently deformable bumper member,

a longitudinally extending track formed in an impact receiving side of said bumper member,

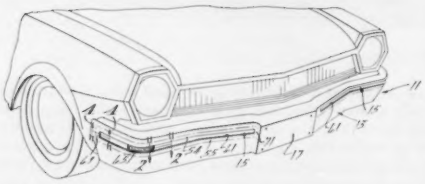
said track having a pair of substantially parallel longitudinally extending side edges and a pair of longitudinally separated ends determining the length of said track,

said bumper member including lip means overlapping and enveloping the side edges and ends of said track,
the inner periphery of said lip means defining a longitudinally extending opening to said track,
said flexible trim strip being positioned between the side edges of said track and retained in position by said lip means,
portions of said flexible strip being covered by said lip means, a remaining portion of said trim strip being exposed and visible through said opening,
friction reducing means formed on the back of said track means between said side edges,
said flexible trim strip being longitudinally displaceable within said track upon deformation of said bumper member.

3,841,680
RESILIENT BUMPER ASSEMBLY

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1972, Ser. No. 234,090
Int. Cl. B60r *19/08;* **E04c** *2/44;* **E04f** *19/02*
U.S. Cl. 293—63 **5 Claims**



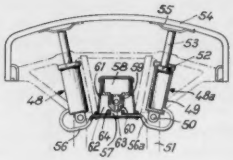
1. A flexible strip and means for retaining said strip to a second member comprising
track means formed in said second member having a pair of substantially parallel side edges and lip means overlapping and enveloping said side edges,
said flexible strip received in said track and retained therein by said lip means,
said flexible strip received in said track and retained therein by said lip means,
said flexible strip having a maximum transverse cross sectional thickness through an intermediate section and a reduced cross section thickness adjacent the side edges thereof,
said flexible strip having a substantially flat front face when uninstalled and having a convex front face when installed in said track means, said convex front face being curved about an axis extending in the longitudinal direction of the flexible strip.

3,841,681
ENERGY ABSORBING DEVICE

Alain Dera, Rueil-Malmaison; Michel Fayolle, Paris, and Roger Maistrelli, Bougival, all of France, assignors to Regie Nationale de Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France, part interest to each

Filed June 8, 1973, Ser. No. 368,458
Claims priority, application France, June 14, 1972, 72.21439
Int. Cl. B60r *19/02;* **F16f** *9/10*
U.S. Cl. 293—70 **8 Claims**

1. An energy absorbing device comprising at least one hydraulic jack having a cylinder, a piston slidable within said cylinder to enable displacement from a starting position toward a second position allowing the jack to compress under shock load, force exerting control means for providing a control force in proportion to the initial value of the pressure in the cylinder during initial jack compression, outlet conduit means for fluid expulsion during jack compression, and throttling means responsive to said control force for throttling the



escape flow of hydraulic fluid from the cylinder along said conduit to maintain substantially constant pressure in said cylinder during substantially all the subsequent travel of said piston along said cylinder.

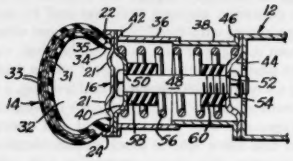
3,841,682
VEHICLE BUMPER RUB STRIP CONSTRUCTION

Herman S. Church, Cuyahoga Falls; James L. Hagener, Canton, and Zach M. Scifres, III, Hartville, all of Ohio, assignors to Teledyne Mid-America Corporation, Hartville, Ohio

Filed June 20, 1973, Ser. No. 371,770
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 R **5 Claims**

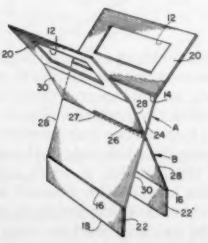
1. Rub strip construction for mounting on a vehicle bumper including, an elongated pad of resilient material; the pad having front and rear surfaces, side edges, and a pair of flanges formed integrally with the pad adjacent said side edges; the flanges projecting laterally outwardly from the rear pad surface and being adapted to engage a bumper when the strip is mounted thereon; reinforcing ribs formed integrally with the resilient pad and extending at spaced intervals between the side edge flanges, and said ribs also extending transversely across the rear pad surface between said flanges; stud means formed on the pad and projecting from the rear pad surface; said stud means including a longitudinally rigid portion having head means embedded within the pad and projecting laterally outwardly from the rear pad surface, and a resilient portion formed integrally with the pad and bonded to the rigid portion; said resilient stud portion being deformed upon longitudinal insertion of the stud means through an opening in a vehicle bumper; and shoulder means formed on one of said rigid and resilient stud portions adapted to engage the rear surface of a vehicle bumper when said stud means is inserted through said bumper opening.

3,841,683
SAFETY BUMPER
Anthony S. Toro, 6834 S.W. 15th St., Pembroke Pines, Fla. 33023
Filed Mar. 12, 1973, Ser. No. 340,045
Int. Cl. B60r 19/10
U.S. Cl. 293—86 2 Claims



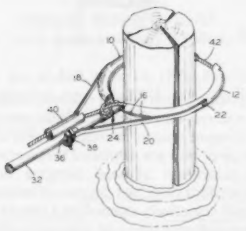
1. A three stage safety bumper for a car comprising:
A. a steel bumper including a forwardly, inwardly extending female peripheral bead;
B. a pneumatic bumper tire removably attached across the outer face of said steel bumper, including,
1. a male, flexible, peripheral sealing bead for removable engagement within said female peripheral bead;
C. an inlet valve stem for inflating said pneumatic bumper tire;
D. telescoping cylinder means attached to and extending between the inner face of said steel bumper and one end beam of the frame of a vehicle comprising,
1. at least two outside cylinders, fixed relative to said steel bumper, and at least two inside cylinders, fixed relative to said end beam in telescopic, sliding engagement with the respective outside cylinders;
E. limiting means, within said telescoping cylinders, to limit the maximum spacing between said steel bumper and beam comprising,
1. a bolt extending through each pair of inside and outside cylinders, fixed relative to said outside cylinder, and a nut, threaded onto said bolt, outwardly of said inside cylinder, to determine the maximum spacing between said steel bumper and end beam;
F. a pair of spaced apart rubber shock absorbers within each pair of telescoping cylinders, circumposed about said bolt; and
G. spring means, within each pair or telescoping cylinders to normally maintain the maximum spacing between said steel bumper and beam, comprising,
1. a heavy compression spring, circumposed about each of said bolts.

3,8~.,684
DISPOSABLE TONGS
Seymour Fleishman, 856 W. Belden Ave., Chicago, Ill. 60614
Filed Dec. 26, 1972, Ser. No. 318,465
Int. Cl. B25b 7/00
U.S. Cl. 294—1 R 9 Claims



1. Disposable tongs formed of a pair of identically constructed strips formed of cardboard or like material, each having spaced side edges, each having a transversely extending slot extending intermediate the top and bottom of said strip and extending from one side edge inwardly but spaced from the opposite side edge, whereby the two strips can be connected together at their slots to form a pivoted connection at said connected slots without the use of extraneous fastening means so that the two strips form tongs, each of said strips having a jaw member at the lower end thereof, and each of said strips having a cutout adjacent the top with the upper portion of each of said strips forming a handle for manual engagement so that same may be manually engaged and moved towards each other to move the jaw members towards each other so that the jaw members can grasp and hold the material or matter to be engaged by the tongs.

3,841,685
LINE HANDLING DEVICE
Andrew S. Kolodziej, 1221 N.W. First Ave., Miami, Fla. 33132
Filed Feb. 1, 1973, Ser. No. 328,865
Int. Cl. B63b 21/04
U.S. Cl. 294—19 R 8 Claims



1. Apparatus for releasably supporting a loop to be engaged with an object comprising:
a pair of arcuate flexible arms, said arms defining arcs of substantially the same radii and of less than 180° length, said arms being of tubular construction and being slotted along their entire lengths;
means for supporting said arms in opposed relationship with the slots therein facing toward the center of a discontinuous circle thus defined by said arms whereby a loop may be releasably held in said arms, said supporting means including means for imparting a limited degree of rigidity to said arms;
removable handle means; and
socket means for receiving said handle means, said socket means extending from said supporting means.

3,841,686
PET WASTE PICKUP DEVICE
Joseph Gallo, and Lillian Fletcher, both of 73 Troutman St., Brooklyn, N.Y. 11206
Filed Mar. 23, 1973, Ser. No. 344,121
Int. Cl. A47l 13/06
U.S. Cl. 294—19 R 15 Claims

1. Pet waste pickup device comprising an elongate tubular body; a handle provided at one end of said tubular body; elongate control means extending through said tubular body and beyond said handle; a yoke having a neck fixedly connected to the other end of said tubular body, said yoke having two spaced opposing shoulders on opposite sides of said tubular body each provided with an elongate slot directed in a direction transverse to the elongate direction of said tubular body, said slots being parallel to one another and disposed substantially in a common plane normal to said tubular body; two scooping sections hingedly connected to each other about a common hinge pin for movement between closed positions,

wherein said sections together define an enclosure adapted to contain the waste, and open positions, wherein each section defines a scoop adapted for picking up the waste; pivot pins disposed in said respective slots in said shoulders, said pins being limited to transverse movements within said slots towards and away from each other within said common plane, said sections being pivotally mounted on said yoke at points remote from the point of connection to said common hinge pin by means of said respective pivot pins, said elongate control means having one end thereof coupled to said common

hinge pin for pivoting each of said sections about their respective pivot pins in response to axial displacement of the other end of said elongate control means and said common hinge pin while said pivot pins are displaced transversely to the axial direction of movement of said elongate control means, whereby said sections have two degrees of movement and can be remotely and selectively opened and closed while holding said handle by axially moving said elongate control means and simultaneously displacing each of said pins while said scooping sections pivot about the latter.

3,841,687

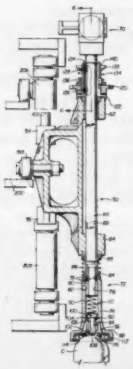
CONTAINER HANDLING APPARATUS

John D. Banyas, Toledo, and Frederick L. Wallington, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 24,173, Mar. 31, 1970. This application June 17, 1971, Ser. No. 154,038

Int. Cl. B66c *1/02*

U.S. Cl. 294—64 R **3 Claims**



1. In a container handling apparatus for handling containers having hemispherical bottoms; container chuck means comprising a hollow annular housing having an open recess at one end and having an inlet passage extending from said recess coaxially through the opposite end of said housing, means in said recess at said one end of said housing defining an annular seat adapted to engage the hemispherical bottom of a container to locate the container in coaxial relationship with said housing with the container bottom projecting a predetermined distance into said recess, a flexible annular seal means mounted in said housing in coaxial relationship with said seat and located to sealingly engage the bottom of a container before the container engages said seat and to maintain the sealing engagement with the container bottom when the container bottom is engaged with said annular seat, valve means in said inlet passage having a valve seat within said inlet passage facing away from said recess of said housing, a valve head slidably mounted in said inlet passage for movement into and out of engagement with said valve seat and operable, when engaged on said valve seat to block communication between said inlet passage and recess, means in said inlet passage normally biasing said valve head against said valve seat, a stem on said valve head slidably received in said inlet passage and projecting from said inlet passage into said recess, said stem having a central passage extending partially therethrough opening into said recess and a cross passage opening from said central passage at a location between said head and said recess, said cross passage being blocked when said head is seated and being unblocked when said head is disengaged with said seat the recess end of said stem being engageable by the bottom of a container engaged by said annular seal to disengage said valve head from said valve seat to thereby place said inlet passage upstream of said seat in communication with said recess via said cross and central passages, and supply means in fluid communication with said inlet passage upstream of said seat for selectively connecting said inlet passage to a source of vacuum or to a source of air under pressure.

3,841,688

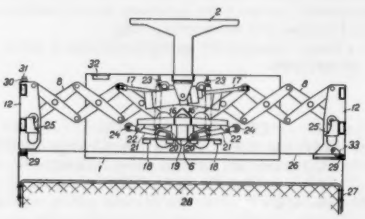
LIFTING DEVICE FOR BALES

Signar Karlsson, Sorberge, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 6, 1973, Ser. No. 394,828

Int. Cl. B66c *1/10*

U.S. Cl. 294—67 R **4 Claims**



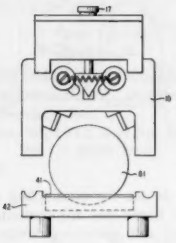
1. Lifting device for lifting a bale (28), which bale is secured by a band (27) surrounding the bale and forming a lifting loop (26) of a magnetic material secured to the band at both sides of the bale, the device comprising a magnet (18) to catch and lift up said lifting loop and two grab members to grip under the lifted loop and raise the whole bale, said grab members being movable in the lifting device, in which said grab members comprise swinging brackets (29) mounted in frames (12) and being mutually movable in the longitudinal direction of the lifting device, the swinging brackets being mounted in one side of the frames and the frames at the other side being provided with locking devices (33) to grab the free end of each swinging bracket and keep it in position during lifting.

3,841,689

SEMICONDUCTOR WAFER TRANSFER FIXTURE

Robert William Hurlbrink, III, Sinking Spring, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 29, 1973, Ser. No. 375,020
Int. Cl. B65b *5/08*; B66c *1/48*
U.S. Cl. 294—87 R 3 Claims



1. A wafer transfer fixture for transferring a batch of substantially circular semiconductor wafers between a deep-walled, internally grooved container and a slotted, unwalled platform-like carrier for holding a batch of wafers in substantially parallel upright array, said fixture comprising

a wafer carrier having a series of parallel, transversely-disposed, internal grooves for retaining said wafers in a separated array, said carrier having an open top and being split into two half portions by a vertical, longitudinally disposed plane, said carrier having a bottom portion arranged to enable a portion of each wafer to protrude therefrom,

a support member for hingedly supporting the half portions of the split carrier in clam-shell relation, and

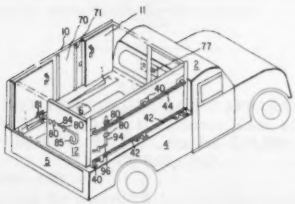
camming means attached to said support frame and said half portions for rotating each carrier half portion to separate the carrier halves a distance greater than the diameter of the wafer.

3,841,690

COMPARTMENT CLOSURE AND SUPPLEMENTAL VEHICLE BODY

Paul L. Piercy, 1630 Lucia Ave., Louisville, Ky. 40204

Filed Aug. 7, 1972, Ser. No. 278,352
Int. Cl. B62c *1/06*
U.S. Cl. 296—10 21 Claims



1. For use with a pickup truck, having an open rear compartment, including:

A. a truck bed.

B. vertically disposed sidewall panels and a front wall panel, and

C. a tailgate, pivotable between open and closed positions:

D. the improvement of a compartment closure and supplemental vehicle body which comprises:

1. a pair of heavy duty sidewall sections convertible from a compartment closure and cargo deck, when disposed in a horizontal plane parallel to said truck bed to sidewall sections of a supplemental vehicle body, when disposed in a vertical plane, in alignment with said sidewall panels of said compartment;

2. hinge means, pivotably securing one end of each of said sidewall sections to the upper portion of said sidewall panels and providing means for movement of the free end of said wall section through an arc from one plane to another;

3. means for urging each of said sidewall sections from the horizontal plane to a vertical plane which includes:

a. a first torsion bar extending essentially the length of said compartment and fixedly mounted at one end to said truck,

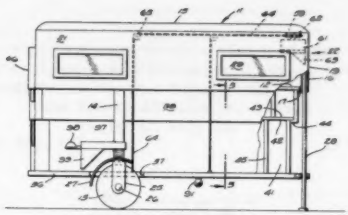
b. a torque arm operatively connected to said torsion bar and to said sidewall section to apply torque to said sidewall section for moving said section from a horizontal plane to a vertical plane and which acts to apply torsion to said torsion bar as said section moves from said vertical plane to said horizontal plane.

3,841,691

MOBILE HOUSING UNIT

Joseph I. Byer, 2896 Radisson Ave., Windsor, Ontario, Canada

Division of Ser. No. 45,068, June 10, 1970, Pat. No. 3,774,955.
This application Apr. 13, 1972, Ser. No. 243,701
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 C 5 Claims



1. A door for a mobile housing unit having an upper part and a lower part with an opening in each of said parts to define an entrance to said mobile housing unit, said door comprising at least two panels interconnected to allow for vertical movement between an extended position with one panel being in a contiguous relationship with respect to the other panel to a telescopic nested position with one panel being received within the other panel, said panels in an extended position closing off the openings in the upper part and the lower part and in a nested position said panels closing off only one of said openings, said one panel being hingedly connected to said mobile housing unit to allow for pivotal movement of said door between open and closed positions so as to allow access to said mobile housing unit.

3,841,692

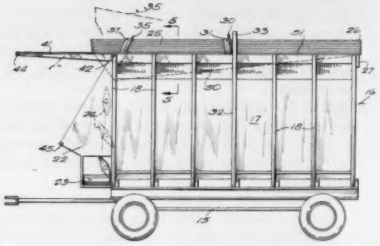
FORAGE WAGON

Lester H. Seifert, Park Ave., Kiel, Wis. 53042

Filed Sept. 25, 1972, Ser. No. 290,692
Int. Cl. B62d *33/08*
U.S. Cl. 296—26 6 Claims

1. A forage wagon having a box with side walls and an elevatable roof, curtain walls depending from the roof and adjacent the box side walls to bridge the gap between the side walls and the roof when the roof is elevated, said curtain walls having hinged connections to the roof on which the curtain walls are free to swing with respect to said roof in the course

of adjusting the roof with respect to the box, said box being provided with struts which project upwardly beyond the top of the box and means interconnecting the struts and roof in a



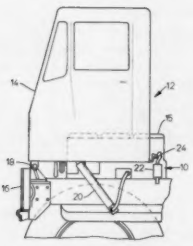
substantially rigid assembly independently of the curtain walls, said struts comprising a pair of struts pivotally connected to the front of the box, said struts having projecting lever ends.

3,841,693

TILT CAB LATCH DEVICE

Roy Reynolds, Milwaukee, and Raymond Clark, Pewaukee, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Oct. 11, 1972, Ser. No. 296,595
Int. Cl. B62d *33/06*
U.S. Cl. 296—35 R **18 Claims**



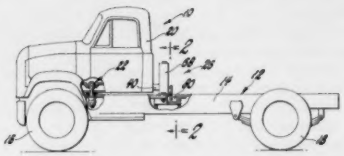
1. In a tilt-cab vehicle having a cab pivotally mounted on a vehicle chassis and movable between an over-the-road position and a tilted position, a lift assembly for tilting said cab, locking means for releasably latching said cab to said chassis comprising: a latch pin mounted on one of said cab and chassis and a latch assembly mounted on the other of said cab and chassis and comprising: a member movable along a longitudinal path in directions toward and away from said latch pin; means for biasing said member in a direction away from said latch pin; a camming plate pivotally connected to said member at a pivot point and having a hook for releasable engagement with said pin; said camming plate being provided with linear and angular cam surfaces and being further provided with a force application point laterally offset from the longitudinal path of travel of said pivot point; a cam guide for guiding engagement with said cam surfaces; and ram means movable along a longitudinal path in a direction toward said latch pin to apply force to said force application point to impart a rotary bias to said camming plate about said pivot point to effect guiding engagement between said cam surfaces and said cam guide and to initially move said hook linearly out of engagement with said latch pin and to subsequently move said hook laterally out of the path of movement of said latch pin.

3,841,694

VEHICLE CAB MOUNTING MEANS

Ralph H. Merkle, Brighton, Mich., assignor to General Motors Corporation, Detriot, Mich.

Filed Nov. 1, 1973, Ser. No. 411,662
Int. Cl. B62d *27/04*
U.S. Cl. 296—35 R **3 Claims**



1. A mounting device for connecting a vehicle cab to a supporting vehicle frame and for cushioning relative movement therebetween, said mounting device comprising a first bracket member adapted to be rigidly secured to said vehicle cab, a second bracket member adapted to be rigidly connected to said vehicle frame adjacent the first bracket member, one of said bracket members being formed with a block member so when said first and second bracket members are secured to the vehicle cab and the vehicle frame at least one pair of opposed seating surfaces are provided above and below a horizontal axis passing through the block member, an air spring adapted to be located between each pair of opposed seating surfaces, a manually controlled valve adapted to connect the air springs located on one side of said horizontal axis to a source of pressurized air for selectively varying the air pressure therein, and a height control valve adapted to connect the air springs located on the other side of said horizontal axis to the source of pressurized air for maintaining the vehicle cab at a fixed height relative to the vehicle frame.

3,841,695

STAKE POCKET ADAPTER

Ernest F. Woodward, 11 Circle Dr., Camp Hill, Pa. 17011

Division of Ser. No. 210,498, Dec. 21, 1971, Pat. No. 3,764,177. This application Mar. 21, 1973, Ser. No. 343,578
Int. Cl. B60p *7/06*
U.S. Cl. 296—43 **5 Claims**

1. In a cargo carrier comprised of a platform provided with vertical stake pockets,

the stakes each being provided with a longitudinally extending threaded opening,

means in the pocket for supporting a stake in upright position comprising,

a plate provided with a central opening extending across the upper end of a pocket and forming a support for, the lower end of the stake,

a resiliently compressible member in the pocket having an opening aligned with that in the plate and stake,

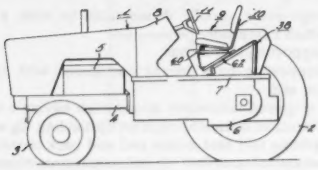
and means having a portion extending through the opening in the plate and member and cooperating with the threaded opening in the stake to compress the member against the plate to expand it laterally into firm engagement with the pocket wall and to secure the stake in upright position to the plate.

3,841,696

ADJUSTABLE TRACTOR SEAT

Robert J. Wagner, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 20, 1972, Ser. No. 316,986
Int. Cl. B60n *1/02*
U.S. Cl. 296—65 R **10 Claims**



1. A horizontally and vertically adjustable seat for a tractor, including a tractor, a platform mounted on said tractor, steering control means, and seat structure mounted on said tractor rearwardly of said steering control means defining an operator station, said seat structure including, a seat mounting on said tractor, rearwardly and upwardly inclined guide means mounted inclined rearwardly upward on said seat mounting for providing a vertical and horizontal adjustment of the seat simultaneously, a horizontal guide means for providing a horizontal adjustment of the seat, a seat mounted on said horizontal guide means, an intermediate support connected intermediate said inclined guide means and said horizontal guide means for providing vertical adjustment of said seat when moved forwardly and rearwardly relative to said seat mounting and said seat, a horizontal latching means on said horizontal guide means to lock said horizontal guide means in its adjusted position, an inclined latching means on said inclined guide means to latch said inclined guide means in its adjusted position, said horizontal guide means and said inclined guide means thereby providing adjustment and locking of said guide means to adjustably position said seat vertically or horizontally when desired by the operator.

3,841,697

COVER FOR LOAD-HOLDING APPARATUS

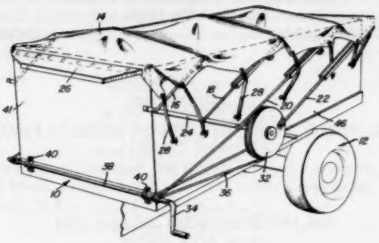
William W. McFarland, Rt. 1, Cimarron, Kans. 67835

Filed Feb. 21, 1973, Ser. No. 334,208
Int. Cl. B60p *7/02*
U.S. Cl. 296—100 **10 Claims**

1. Apparatus for covering a load-holding structure, comprising, in combination:

a. a cover;

b. a plurality of supports attached to the cover and pivotally mounted on load-holding structure at pivot points spaced along a pivot plane arranged at an angle with respect to an opening to be covered, the pivot plane being arranged nearest to the opening at a point adjacent an end of the opening and extending linearly away from the end and the opening to be covered, the supports being of different lengths directly proportional to the distance of a respective pivot point from the opening to be covered, with the shortest of the supports being arranged nearest the opening to be covered for causing all of the supports to raise upwardly, away from the load, when moving between a cover open position and a cover closed position, wherein each support is a substantially U-shaped hoop pivotally mounted on opposed sides of the load - holding structure, and wherein each hoop has a pair of substantially parallel



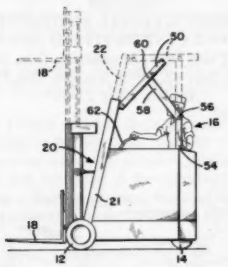
legs, at least some of the legs having a guide and guide wheel associated therewith and mounted thereon in opposed relationship to one another, each guide channel arranged for receiving the guide wheel of an adjacent leg when the hoops are in an opening - uncovered position and for a portion of the time during the closing and covering operation, said guide channels and said guide wheels of adjacent legs engage each other to aid in the closing and covering of said load holding structure.

3,841,698

VEHICLE WITH RETRACTABLE GUARD

Harold A. Stammen, New Bremen, Ohio, assignor to Crown Controls Corporation, New Breman, Ohio

Filed Feb. 26, 1973, Ser. No. 335,912
Int. Cl. B60j *7/00*
U.S. Cl. 296—107 **11 Claims**



1. In a materials handling vehicle including an operator's station having vehicle controls adjacent thereto and accessible therefrom, an operator safety guard comprising:

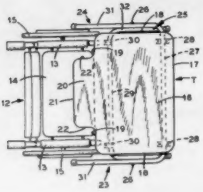
a. shield means for protecting said operator's station from objects falling thereon,

b. support means including first and second upright means projecting upwardly from said vehicle and permanently attached to and between respectively the front and rear portions of said vehicle and said shield means,

c. means for retracting and extending said first upright means and thereby moving said shield means between a substantially horizontal protective position over said operator's station and a substantially vertical, lowered position wherein the overall height of said vehicle is reduced,

d. a first edge of said shield means during movement thereof moving with the extending end of said first upright means while the opposite edge of said shield means pivots in an arc about said first edge thereof.

3,841,699
COMBINATION CHAIR AND TABLE
Morton I. Thomas, 125 South St., Monroe, N.Y. 07055
Filed July 14, 1972, Ser. No. 272,050
Int. Cl. A47b *39/00*
U.S. Cl. 297—174 **5 Claims**

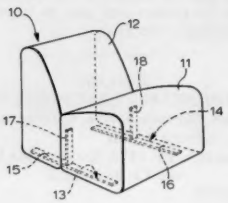


1. In combination, a chair having side arms with a predetermined lateral spacing therebetween, and a table for use with said chair, said table comprising a table top and leg means mounted on the underside of said table top, said table top comprising a first portion having a width greater then the spacing between said side arms and locatable adjacent and across the chair immediately forward of the outer ends of the side arms, a second portion integral with said first portion and having a width somewhat less then the spacing between said side arms locatable between the side arms of said chair and projecting inwardly of the outer ends of said side arms for disposition adjacent the abdomen of the user.

3,841,700
SEMIFINISHED UNIVERSAL AUTOMOTIVE SEAT COVER KIT FOR CUSTOM FITTED INSTALLATION
John Beck, 165 Coral Way, Broomfield, Colo. 80020
Filed Apr. 12, 1973, Ser. No. 350,329
Int. Cl. A47c *27/00*
U.S. Cl. 297—219 **2 Claims**

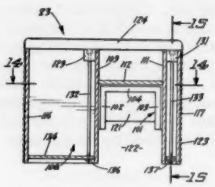
1. An automobile seat cover kit for covering all exposed surfaces of the seat and back cushions of an automobile seat comprising precut and presewn flat panel units of excess outer dimensions for covering those cushions having either a single exposed corner edge or two parallel exposed corner edges, and separate precut flat individual panels for covering all other exposed surfaces of those cushions having exposed three surfaced corners, said separate precut individual panels being of flat rectangular configuration and of overall dimensions slightly exceeding the maximum longitudinal and transverse dimensions of the respective cushion surfaces which the individual panels are to cover.

3,841,701
CONNECTABLE LOUNGE CHAIRS
William H. Sullivan, Dallas, Tex., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1974, Ser. No. 447,070
Int. Cl. A47c *15/00*
U.S. Cl. 297—248 **9 Claims**



1. Lounge chair, serially connectable to form a lounge system, which comprises
a self-supporting seat means;
a self-supporting back means contiguous with said seat means; and
a pair of spaced connector means each having a substantially horizontal member and an upstanding leg member, and joining said seat means and said back means;
each horizontal member of said connector means being secured to said back means and to said seat means, and each upstanding leg member being interposed between said back means and said seat means.

3,841,702
ARM REST
Clarence R. Johnson, 1002 Central Ave., Duluth, Minn. 55811, and Jay T. Kidder, 4920 Vallacher Ave., Minneapolis, Minn. 55416
Continuation-in-part of Ser. No. 212,079, Dec. 27, 1971, Pat. No. 3,729,753. This application Apr. 30, 1973, Ser. No. 355,940
Int. Cl. A47c *7/54, 13/38*
U.S. Cl. 297—416 **12 Claims**

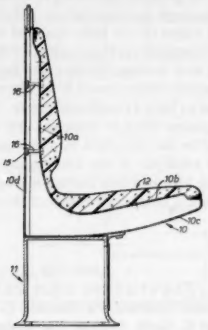


1. An arm rest adapted to be removably mounted on an upright support extended from a piece of seating furniture and having opposed upright portions, said arm rest comprising: frame means having interior spaced first upright members adapted to be positioned adjacent said opposed portions of the upright support, side panel means located between the first upright members, a second cross member located across the upper portions of the first upright members, said first upright members and side panel means and second cross member forming a pocket for receiving said upright support, said second cross member, adapted to engage the upright support to limit downward movement of the arm rest relative to the upright support, and means covering the frame means.

3,841,703
VEHICLE SEATS

Frederick G. Lowe, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 26, 1973, Ser. No. 345,034
Claims priority, application Great Britain, Apr. 11, 1972, 16547/72
Int. Cl. A47c 7/00, 7/02
U.S. Cl. 297—445 6 Claims

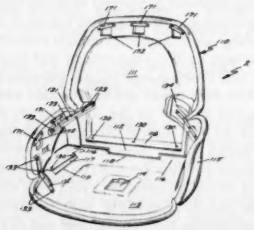


1. A vehicle seat comprising a hollow seat shell and upholstery secured to the front face thereof, said upholstery comprising foam padding mounted on a frame formed of a metal strip extending around the periphery of the padding and covered by a facing material attached to the frame, the frame being shaped to fit against the face of the seat shell and removably secured thereto by fastening means spaced apart around the shell, said fastening means including hook members secured to the seat shell which engage over the frame and locking devices each comprising a part fixed to the frame and a part fixed to the seat shell, the two parts being capable of interlocking by movement of the frame toward the seat shell in a direction perpendicular thereto, but incapable of separation except by tilting of one part relative to the other, said fastening means being inaccessible without deformation of the upholstery or associated parts of the seat.

3,841,704
CHAIR

Warren Platner, New Haven; Ronald L. Whitewam, Caledonia; Stephen B. Kolk, and Earl G. Ursul, both of Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 26, 1973, Ser. No. 344,851
Int. Cl A47c 7/02
U.S. Cl. 297—458 27 Claims

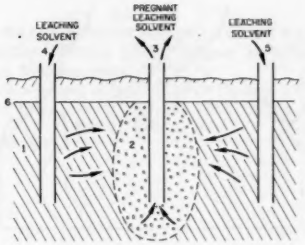


1. In a contoured, molded plastic shell chair, the improvement comprising: the exterior shell of said chair defining a seat, back and arms and being segmented along the lines of sharpest contour thereof, including at least along the juncture between the seat of the shell and back of the shell and along the junctures between the arms of the shell and the seat and back of the shell, such that said shell is compised of a plurality of separate segments; each said segment being contoured somewhat in accordance with a desired aesthetic design, but being free of sharp angle contours whereby each segment can be separately upholstered with unseamed upholstery segments; an unseamed upholstery segment covering the exterior of each of said shell segments; attachment means joining said shell segments togther to provide an upholstered exterior shell for said chair.

3,841,705
STIMULATION OF PRODUCTION WELL FOR IN SITU METAL MINING

Lucien Girard, Boxboro, and Robert A. Hard, Lexington, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,484
Int. Cl. E21b 43/28
U.S. Cl. 299—4 10 Claims



1. An improved process for recovering metal values by in-situ leaching an ore body located below the water table which comprises:

a. forming a rubblized zone in an ore body whereby the rubblized zone contains fractured metal bearing ore particles;

b. injecting a leach solution through one or more injection wells located in the ore body adjacent to but outside the rubblized zone, the leach solution solubilizing metal values in the ore body and in the rubblized zone; and

c. recovering a metal containing leach solution through one or more production wells located in the rubblized zone.

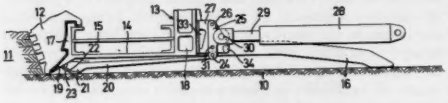
3,841,706
CONTROL ROD FOR LONGWALL MINING INSTALLATION

Herbert Huttenbrauck, Hillering; Helmut Poklekowski, Lunen; Mustafa Soliman, Lunen-Sud, and Berthold Ostrop, Werne, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed May 2, 1973, Ser. No. 356,559
Claims priority, application Germany, May 2, 1972, 2221478
Int. Cl. E21c 27/35
U.S. Cl. 259—34 16 Claims

1. In a mineral mining installation composed of a conveyor and guide means for guiding a mineral winning machine for movement along the conveyor; the improvement comprising at least one control device for controlling the position of the

guide means, said control device having an elongate rod extending beneath the conveyor with a head for slidably engaging and moving between the floor of a working and the guide means, and means for moving said rod axially to thereby effect raising or lowering of the guide means.



3,841,707

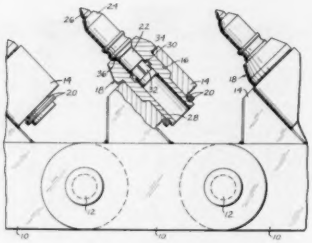
CUTTER CHAIN WITH STAGGERED ROTARY BITS

Thomas J. Kniff, and Donald L. Leibee, both of Bedford, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 130,209, April 1, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,533

Int. Cl. E21c *35/18, 13/00;* **E02f** *9/28*

U.S. Cl. 299—84 **2 Claims**



1. A cutter chain, especially for excavating operations comprising: a plurality of links pivoted together in end to end relation to form an endless chain adapted for being supported and driven in the direction of the length of the chain with both reaches of the chain in a single plane, a block fixed to each said link and projecting outwardly therefrom in the general direction of said plane, bores in said blocks, pick type bits each symmetrical about a respective longitudinal axis and each having a rearward shank portion which is round in cross section and a front portion which tapers inwardly to a point at the front end of said bit, a sleeve rotatable in the bore in each block and each bit having the shank portion thereof rotatably mounted in a respective sleeve, each sleeve and block and each bit and sleeve comprising interengaging elements of abutment means for sustaining axial thrusts imposed on the bits in operation, said blocks supporting said sleeves and bits with the longitudinal axes of the bits diverging from said chain in the forward direction when said chain is viewed from the side, each block having a planar bottom surface engaging the respective link of the chain, each said bottom surface being disposed at a respective angle with respect to a central axial plane of the block when viewed longitudinally of the chain for supporting the blocks on the chain so that some of said blocks are tilted on said chain in respective directions lateral to said plane when said chain is viewed in lateral cross section, at least said some of said blocks being positioned on the chain with the longitudinal axes thereof disposed at an angle to the said plane in which the reaches of the chain are disposed when the chain is viewed from above so the longitudinal axes of the respective bits therein diverge from said plane in respective directions in the forward direction and at respective angles, the said tilting of said blocks on said chain and the said angular positioning of the said longitudinal axes thereof relative to said plane disposing the point ends of the bits therein in laterally distributed relation with respect to the said plane in which the reaches of the chain are disposed, said blocks and bits being arranged in successive groups along said chain, an adjacent pair of groups forming a sequence, the leading group of blocks and bits in a sequence including a leading block whic presents the bit therein with the longitudinal axis in said plane, the other blocks of said groups presenting the bits carried thereby at respective angles of inclination to said plane so the point ends of the bits are disposed alternately on opposite sides of said plane, each group terminating at the trailing end in blocks disposed to support the bits therein with the point ends at the extreme side edges of the path spanned by the point ends of the bits of the sequence, the angle at which the axis of each bit following said leading bit diverges from said plane in the forward direction when viewed from above the chain increasing from front to back in each said group, the point ends of the bits of said groups being so disposed that when a sequence of bits is viewed in the direction of movement of the chain, the point end of each bit of the trailing group of the sequence other than the terminal bits thereof is disposed about midway between adjacent point ends of bits of the leading group of the sequence.

3,841,708

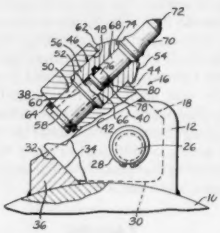
EXCAVATING TOOL DEVICE

Thomas J. Kniff, Bedford, Pa.; Donald L. Leibee, Belfry, Ky., and Seibert S. Oaks, Everett, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed June 15, 1972, Ser. No. 263,185

Int. Cl. E21c *35/18*

U.S. Cl. 299—86 **11 Claims**



1. A tool device for use with excavating equipment comprising; yoke means having a leading end and a trailing end and having a bottom side adapted for being fixedly mounted on a driving member which is movable to drive the yoke means toward the leading end thereof, said yoke means comprising spaced support legs extending in the fore and aft direction and projecting upwardly away from said member, block means comprising an upper portion and at least one rib dependent from said upper portion and extending in the fore and aft direction and disposed in parallel adjacent and at least in part coextensive relation to said support legs and also having leading and trailing ends, connector means extending transversely through the legs on the yoke means and said rib detachably connecting said block means to said yoke means, bore means extending into said upper portion of said block means from the leading end thereof in the fore and aft direction and so inclined that the axis thereof diverges from the bottom side of said yoke means in the direction of movement imparted to said yoke means and block means by said member, tool means having shank means receivable in said bore means and having working end means concentric with said shank means and protruding outwardly from the leading end of said bore means, cooperating elements of abutment means on said tool means and block means to sustain working loads imposed on said tool means, keeper means retaining said tool means in said bore means while permitting rotation of the tool means in said bore

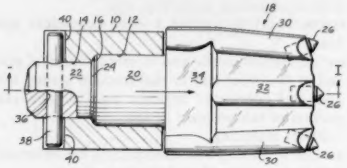
means, the side of said rib facing away from said upper portion of said block means extending substantially parallel to the direction of movement of the block means during working operations, a rearwardly facing first abutment surface on the rear end of said rib disposed in a plane substantially perpendicular to the axis of said bore means in the block means, and a forwardly facing second abutment surface on said yoke means parallel to and engaging said first abutment surface.

3,841,709

EXCAVATING TOOL ARRANGEMENT

Thomas J. Kniff, Bedford, Pa., assignor to Kennametal, Inc., Latrobe, Pa.

Filed May 7, 1973, Ser. No. 357,696
Int. Cl. E21c *35/18*
U.S. Cl. 299—88 **19 Claims**



1. In an excavating tool; a support block having a bottom surface and a forward face and a rearward face, a round bore extending through the block and intersecting both of said faces and diverging from said bottom surface in the forward direction, said block being adapted for mounting on a driver for driving said block in a direction parallel to said bottom surface, a bit having a shank portion which is round in cross section and slidably fitted in the bore in the block, said bit having a forward working portion extending forwardly from the forward face of the block and substantially coaxial with said shank portion, said working portion being generally rectangular when viewed in plane and also when viewed in cross section perpendicular to the axis of said shank with a greater dimension parallel to said bottom surface of said block and a smaller dimension, said working portion having cutting means at the free end distributed thereon in the direction of the said greater dimension, cooperating elements of key means on said bit and said block operable to locate said bit in a rotated portion in said block and to hold said bit in said rotated position during working operations, and cooperating elements of abutment means on said bit and block to sustain working loads imposed on said bit when the bit and block are driven into a formation by the driver on which the block is mounted.

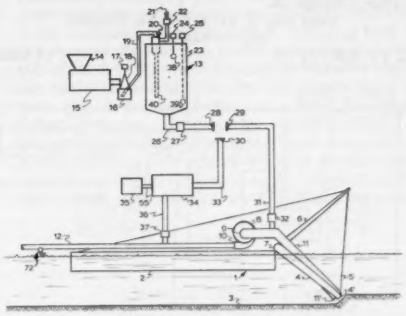
3,841,710

METHOD AND APPARATUS FOR MOVING SOLIDS FROM A REMOTE LOCATION

Thomas M. Boland, Orange, and Frank G. White, Newport Beach, both of Calif., assignors to Shellmaker, Inc., Petaluma, Calif.

Filed Feb. 16, 1973, Ser. No. 333,042
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **8 Claims**

1. In a system for dislodging solids in a first remote location and conveying said solids in a conduit to another remote location a substantial distance from said first remote location by providing a floating unit having a pumping means mounted thereon, said floating means being positioned in close proximity of said first location and a substantial distance from said another location and frictional forces in said conduit causes a reduction in the amount of solids conveyed to said another remote location; the improvement comprising sensing the rate of deposition of said solids in the lower portion of said conduit with a heated unit that is cooled by the flowing material through said conduit and heats to a predetermined temperature when solids cover said heated unit and adding a surfac-



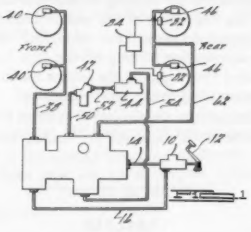
tant to said conduit in response to the rate of deposition to reduce the frictional forces in said conduit with respect to said solids being conveyed therethrough.

3,841,711

DUAL BRAKE SYSTEM HAVING BYPASS VALVE

William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 661,415, Aug. 17, 1967, abandoned. This application Nov. 29, 1968, Ser. No. 780,029
Int. Cl. B60t *11/34*
U.S. Cl. 303—6 C **35 Claims**

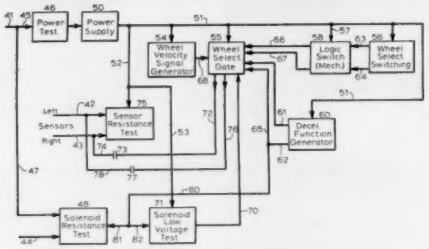


1. A brake system including a dual master cylinder having means for separately pressurizing two fluid systems, front and rear brakes, a pressure modulating device connected to said rear brakes, a bypass valve arranged to receive fluid pressure from said master cylinder and having a first path for the transmission of fluid pressure from said master cylinder to said pressure modulating device and a second path for the direct transmission of fluid pressure from said master cylinder to said rear brakes without going through said modulating device, said bypass valve having a pressure responsive member exposed to the pressure of the fluid in said two fluid brake systems on opposite sides thereof and valve means associated with said pressure responsive member, said valve means normally maintaining said first path open and said second path closed, said valve means being operable to close said first path and open said second path in response to a movement of said pressure responsive member occasioned by a loss of pressure in the front brake system.

3,841,712
ANALYZER FOR CONTROL SYSTEM WHICH REGULATES VEHICLE BRAKING

Ronald L. Syria, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 1, 1972, Ser. No. 276,981
Int. Cl. B60t 8/12
U.S. Cl. 303—21 AF **13 Claims**



1. An anlyzer for use with a regulated braking arrangement having a control system including a power line, at least one sensor input for receiving a signal related to wheel velocity, and a pressure relief signal output connection for coupling to a solenoid winding to provide a signal which reduces braking pressure and obviates wheel lock-up, which analyzer comprises:

a sensor resistance test circuit, having an input connection for coupling to the sensor input in the control system, operative to determine whether the sensor resistance value is between predetermined upper limit and lower limit values, including a reference resistor connected to complete a voltage divider with the sensor under test, an indicator circuit, including a first transistor series-coupled with an indicator component, means including a second transistor for turning on the first transistor when the effective resistance of the sensor under test is below the predetermined upper limit value, and means including a third transistor for turning off the first transistor when the effective resistance of the sensor under test is below the predetermined lower limit value; and

a power supply stage, connected to receive power from the control system and to energize the sensor resistance test circuit.

3,841,713
LOAD-DEPENDENT BRAKE FORCE DISTRIBUTOR

Hermann Seip, Bad Vibel, Germany, assignor to ITT Industries, New York, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,040
Claims priority, application Germany, Nov. 9, 1971, 2155706
Int. Cl. B60t 8/22
U.S. Cl. 303—22 R **4 Claims**

1. A load-dependent brake force distributor connected between a master cylinder and wheel brake cylinders comprising:

a cylinder;

a stepped piston disposed in a longitudinal slidable sealed relation in said cylinder;

an input prssure medium chamber formed between one end of said cylinder and one side of said stepped piston;

an output pressure medium chamber formed between the other end of said cylinder and the other side of said stepped piston;

a first valve disposed concentrically of said stepped piston to connect said input chamber to said output chamber in its open position;

a first arrangement connected to said stepped piston responsive to a load-dependent control force to open and close said first valve; and

a second arrangement associated with and actuated by said piston to provide a direct connection between said input chamber and said output chamber when said control force fails;

said cylinder having a first diameter and including

a cylindrical projection extending therefrom having a second diameter less than said first diameter;

said stepped piston including

a first portion spaced from said cylindrical projection having a third diameter less than said first diameter,

a second portion adjacent said cylindrical projection having a fourth diameter equal to said first diameter, and

a third portion having a fifth diameter equal to said second diameter slidably sealed to the inner surface of said cylindrical projection;

said first arrangement including

a traction spring exerting a force dependent upon said load,

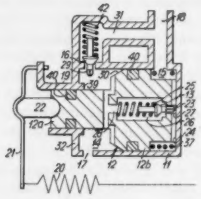
a bar connected at one end to said cylindrical projection and at the other end to said traction spring, and

a push rod connected between said bar and said third portion of said stepped piston;

said cylinder including

a transverse closing wall spaced from the adjacent end of said first portion of said stepped piston;

said first and second portions of said stepped piston including



a cavity disposed concentrically of the longitudinal axis of said stepped piston,

an aperture at each end of said cavity, one of said apertures communicating with said input chamber and the other of said apertures communicating with said output chamber,

said first valve being disposed within said cavity, and

a valve spring disposed about said valve within said cavity to assist in the control of said first valve;

said first valve including

a pin projecting from one end thereof through said other of said apertures, said pin abutting said closing wall and opening said first valve against the force of said valve spring when a predetermined amount of said control force is applied to said third portion of said stepped piston;

said second arrangement including

a normally closed second valve which is open when said control force fails by the movement of said stepped piston away from said closing wall to cause said stepped piston to engage and open said second valve;

said second portion of said stepped piston including

a bevelled surface disposed in said input chamber; and said second valve is disposed in a perpendicular relation to the longitudinal axis of said stepped piston and extending through a wall of said cylinder in said input chamber;

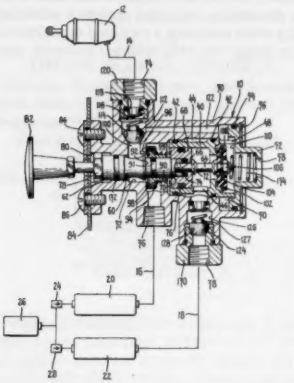
said second valve including

a tappet extending therefrom to engage said bevelled surface to open said second valve upon failure of said control force.

3,841,714
PARKING BRAKE CONTROL

Forrest O. E. Schultz, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed May 2, 1973, Ser. No. 356,300
Int. Cl. B60t 13/22
U.S. Cl. 303—71 3 Claims



1. A parking brake control valve comprising a housing, a first inlet port adatped for connection to a first source of air under pressure, a second inlet port adatped for connection to a second of air under pressure, a pressure outlet port adapted for communication with a parking brake, an exhaust port open to the atmosphere, a valve control means slidable in said housing between a brake applied position and a brake released position and including a first control valve closing said first inlet port to said pressure outlet port when said control means is in said brake applied position and opening said first inlet port to said outlet port when said control means is in said brake released position, a second control valve closing said second inlet port to said outlet port and opening the latter to said exhaust port when said control means is in said brake applied position and closing said exhaust port and opening said second inlet port to said outlet port when said control means is in said brake released position, said valve control means including a piston is said housing between said inlet ports and separating said inlet ports from each other, biasing means urging said control means to said brake applied position, said valve control means being movable from brake released to brake applied position in response to the presence of pressure at said first inlet port and at one side of said piston below a predetermined minimum and being manually movable against the action of said biasing means to a brake released position when the pressure at the other side of said piston is below a predetermined minimum, and check valve means between said outlet port and said second inlet port preventing communication therebetween when said control means is in a brake released position and the pressure at said second inlet port is less than at said first inlet port.

3,841,715
IDLER MOUNTING MECHANISM AND TRACK ADJUSTER

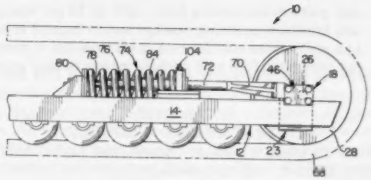
Glen S. Comer, Jr., and Ellis A. Stitton, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 26, 1972, Ser. No. 318,517
Int. Cl. B62d 55/10, 55/30
U.S. Cl. 305—10 6 Claims

1. In a tractor, a pair of track assemblies associated therewith, one disposed on either side thereof, each track assembly comprising:

a track frame comprising first and second generally parallel box-like elongated beams of rectangular cross-sections;

a slidable member comprising a top portion extending across the top portions of the rectangular beams, a first downwardly extending portion extending from the top portion and along the entire inner side of the first beam, a first outwardly extending portion extending from the first downwardly extending portion and along the bottom side of the first beam, and a second downwardly extending portion extending from the top portion along the outer side of the first beam, and a third downwardly extending portion extending from the top portion along the entire inner side of the second beam, a second outwardly extending portion extending from the third downwardly extending portion and along the bottom side of the second beam, and a fourth downwardly extending portion



extending from the top portion along the outer side of the second beam, to provide a positive placement of the slidable member while allowing sliding of the slidable member along the first and second beams;

a first rotatable member mounted on the slidable member and movable therewith;

a second rotatable member fixed relative to the track frame;

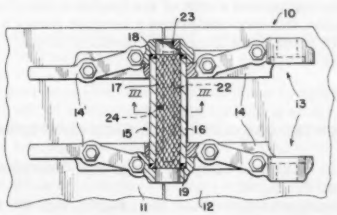
a track disposed around and in engagement with the first and second rotatable members; and,

resilient means associated with the track frame and slidable member for allowing recoil of the first rotatable member toward the second rotatable member, against the resiliency thereof.

3,841,716
LUBRICATED TRACK JOINT

Raymond E. Webber, Phoenix, Ariz.; Roger L. Boggs, East Peoria, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 20, 1972, Ser. No. 290,553
Int. Cl. B62d 55/20
U.S. Cl. 305—11 1 Claim



1. An endless track assembly comprising a plurality of ground engaging track shoes, and an articulated link assembly connecting said shoes together comprising

a plurality of links,

pivot means pivotally interconnecting each pair of adjacent links together, including

a cylindrical bushing,

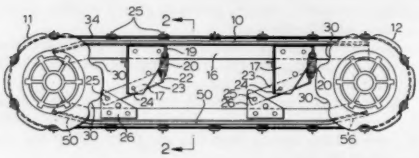
a tubular pin having a substantially constant outside diameter throughout its entire length and pivotally mounted within said bushing, said links comprising a first pair of links secured to respective ends of said bushing and a second pair of links secured to respective ends of said pin; annular sealing means disposed between each end of said bushing and a respective one of said second links and circumferentially contacting said pin,

means forming a plurality of uniformly spaced and circumferentially disposed bearing surfaces between said bushing and said pin forming a plurality of lubricant retaining and dispersing grooves therebetween; said bearing surfaces each constituting a diamond-shaped knurl formed on said pin, two sets of said grooves formed between said knurls with the grooves of each set formed in spiralled, parallel relationship; said knurls and grooves being uniformly formed substantially along the entire axial length of said pin and terminating short of the ends thereof; with said grooves numbering from eight to 32 per linear inch, and lubricant retaining passage means formed in said pin and port means also formed in said pin for communicating lubricant from said passage means to said grooves.

3,841,717
TRACK SLIDE ASSEMBLY

Antonio Parisotto, Coniston, Ontario, and James Nemis, Sudbury, Ontario, both of Canada, assignors to Original Equipment Manufacturing Limited, Sudbury, Ontario, Canada

Filed May 29, 1973, Ser. No. 364,507
Int. Cl. B62d *55/10*
U.S. Cl. 305—25 **4 Claims**



1. In a snow-mobile track assembly including a pair of horizontally spaced apart wheels;

a continuous flexible driving track movable about said wheel;

the improvement which comprises at least one track slide extending between said wheels to guide said track thereabout;

said track slide comprising a rigid metal member having an outer surface and a strip of low-friction material secured thereto, said strip comprising a laminate having a plurality of lamina extending in the direction of travel of said track.

3,841,718
AUGMENTED CRESCENT SEAL WITH COMPENSATING LOAD RING

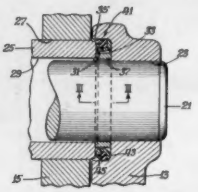
Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 116,157, Feb. 17, 1971, abandoned. This application Oct. 25, 1972, Ser. No. 300,817
Int. Cl. F16j *15/38*
U.S. Cl. 305—11 **19 Claims**

1. A seal assembly comprising

first and second axially spaced members mounted for relative rotation about a common axis, the first member having a counterbore formed in one face, the second member having an end face opposite the counterbore,

a seal ring of tough abrasion resistant material having a crescent shape in cross-section disposed in the counterbore with the crescent shaped cross section defining an annular groove facing the sidewall of the counterbore, the seal ring including a driving flange engaged in non-rotative driving contact with the sidewall and an end wall of the counterbore at the juncture of these walls, a sealing flange engaged in annular face sealing rotative contact with the end face of the second member, the driving said sealing flanges being interconnected by a wall section of substantially thinner cross section than that of the flanges, the thin dimension imparting thereto a substantial lateral flexibility while retaining a torsional modulus characteristic of the tough abrasion resistant material, and



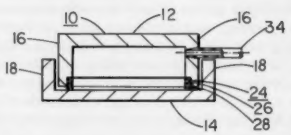
a load ring of elastomeric material having substantial spring response characteristics, said load ring being disposed within the annular groove of the crescent shaped seal ring and engaging substantially the entire inner wall surface of the sealing flange and being axially compressed between the driving flange and the sealing flange,

the interconnecting thin wall section having a resiliency and torsional modulus such that virtually all driving torque is transmitted from said driving flange to said seal flange therethrough, whereas virtually all of the seal flange face load is derived from compression of said load ring.

3,841,719
SELF-CONTAINED VARIABLE FLUID BEARING FOR SKIDDING HEAVY LOADS

George Rogers Smith, 3101 Lake Villa Dr., Metairie, La. 70002

Filed June 21, 1972, Ser. No. 265,087
Int. Cl. F16c *21/00*
U.S. Cl. 308—5 **3 Claims**



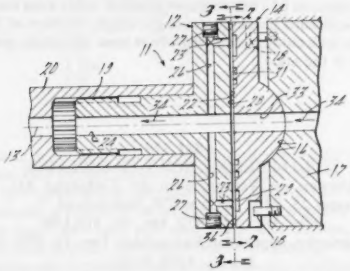
1. A self-contained variable fluid bearing for skidding heavy loads comprising: an upper skid plate with depending sides, ends, and a transverse divider, intermediate said ends, which in combination define a pair of bottom-opening pair of longitudinally aligned enclosures with depending free ends and oppositely disposed load supporting surface; a lower skid plate adapted to supportively engage said depending free edges and extend normal therebeyond for supporting said upper skid plate in relative longitudinal movement therebetween, and to define therewith longitudinally aligned closed chambers therebetween, said lower skid plate having upwardly extending sides spaced transversely apart and adapted to guide said upper skid plate in said longitudinally relative movement; antifrictional and compressible sealing means recessed in the free edges of said enclosures to reduce sliding friction between said skidplates, and to compress under a load to seal each of said longitudinally aligned chambers independently of each

other for maintaining sealing in one of said chambers when said upper skid plate is longitudinally moved less than said transverse divider beyond said lower skid plate; and input means for introducing pressure fluid in each of said closed chambers to vertically raise said upper skid plate with respect to the lower skid plate less than the compression of said sealing means by said load for simultaneously maintaining sealing while reducing the force of said load and hence the friction between the meeting and supporting parts.

3,841,720
THRUST BEARING ASSEMBLY

James T. Kovach, Dearborn Heights, and Antoni Paluszny, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 2, 1973, Ser. No. 347,268
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **7 Claims**



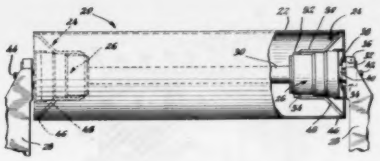
1. A thrust bearing assembly comprising:
a first member rotatable about a given axis and having a first bearing surface,
a second member being non-rotatable about said given axis and having a second bearing surface slidingly engageable with said first bearing surface,
an annular groove formed in said second bearing surface spaced radially inwardly from the outer periphery thereof,
a plurality of curved grooves formed in said second bearing surface extending inwardly from said annular groove and terminating on said second bearing surface at locations radially spaced from said given axis,
one or more ports opening on said first bearing surface into said annular groove,
said first member having means to supply a viscous fluid lubricant to said one or more ports for discharge into said annular groove.

3,841,721
BEARING CARTRIDGE ASSEMBLY

Ralph W. Coutant, Ho-Ho-Kus, and Frederick Schlueter, Rahway, both of N.J., assignors to Litton Systems Inc., Passaic, N.J.

Filed June 2, 1970, Ser. No. 42,623
Int. Cl. F16c *35/00*
U.S. Cl. 308—20 **3 Claims**

1. In a roll assembly having a roll shell, a bearing cartridge assembly comprising: roll head means for retaining a bearing cartridge means and for adapting said bearing cartridge means to fit within the roll shell; bearing cartridge means, said bearing cartridge means having bearing means mounted therein and said bearing cartridge means having means which cooperate with said bearing means to limit the axial movement of said bearing means with respect to said bearing cartridge means; said roll head means and said bearing cartridge means having stepped internal and external diameter portions respectively, whereby said roll head means and said bearing cartridge means have complementary surfaces on either side of said bearing means, said complementary surfaces engaging each other and cooperating to frictionally retain said bearing cartridge means within said roll head means; and said stepped internal and external diameter portions of said roll head

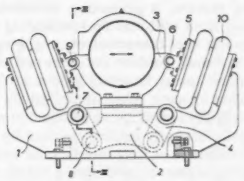


means and said bearing cartridge means defining an annular space therebetween located radially outward with respect to said bearing means and extending axially a distance at least as great as the width of said bearing means thereby preventing the transfer of the forces caused by the frictional engagement between said complementary surfaces of said roll head means and said bearing cartridge means from being transferred to said bearing means.

3,841,722
AUTOMATIC GUIDE FOR ROLL

Lasse Lehtonen, Tampere, Finland, assignor to Oy Tampella Ab

Continuation of Ser. No. 235,241, March 16, 1972. This application July 27, 1973, Ser. No. 383,051
Int. Cl. F16c *29/00*
U.S. Cl. 308—59 **11 Claims**

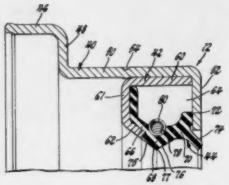


1. A roll support and adjustment mechanism, comprising:
a. journal bearing adapted to receive and to rotatably support one cylindrical end part of a roll;
b. support means for said bearing disposed completely to a first side of a diametrical plane containing an axis of said bearing, said plane defining first and second regions of said bearing disposed on first and second sides of said plane, respectively;
c. a mechanical linkage connecting said first region of said bearing to said support means and disposed completely to said first side of said diametrical plane; and
d. pneumatic motor means arranged to act between said support means and said first region of said bearing and disposed for the most part on said first side of said diametrical plane, and effective to cause movement of said axis in said diametrical plane; said mechanical linkage comprising links pivotally connected between said first region of said bearing and said support means and of such lengths that during this movement of said axis, said axis remains in said diametrical plane.

3,841,723
RAILWAY BEARING SEAL

Albert H. Kelso, Marblehead, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 22, 1973, Ser. No. 362,932
Int. Cl. F16c 33/76
U.S. Cl. 308—187.1 1 Claim



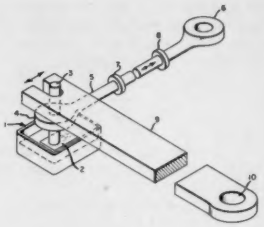
1. In a railway journal box bearing assembly having an outer race mounted on said journal box, an inner race mounted on a rotatable shaft, antifriction elements between said races, and a sealing ring having an opening for conveying lubricant toward said elements mounted on the shaft, a seal comprising: an outer case having an axially extending cylindrical sleeve section connected at one end to the outer race and terminating at the other end with a radially inwardly extending annular rim; a replaceable inner case having an elastomeric sealing element, said inner case having an axially extending sleeve section releasably engaging the inner surface of said sleeve section of said outer case and engaging said rim of said outer case; a radially inwardly extending annular rim on said inner case axially spaced in assembly from said annular rim of said outer case to define an inwardly opening annular channel, a pair of converging frustoconical walls formed on the inner surface of said sealing element adjacent said rim, said surfaces defining a seal lip engageable with said sealing ring outboard of said opening therein, a projecting cantilevered flexible section extending from said seal lip terminating at the other end with an annular heel compressively engaging said rim of said outer case to fixedly position the other end of said sealing element, an annular spring retaining groove in the outer surface of said sealing element substantially axially aligned with said seal lip, a helically coiled spring retained in said retaining groove for radially inwardly biasing the seal lip against said sealing ring to establish a sealing interface for retaining lubricant at the biasing elements, said spring axially biasing said heel against said rim of said outer case, an annular dust lip formed on the inner surface of the element adjacent said other end, said dust lip having an interference fit with said other member, the engagement of said heel and said rim radially supporting said other end of said sealing element to isolate the dust lip from the resultant force of the spring.

3,841,724
WEAR RESISTANT FRICTIONALLY CONTACTING SURFACES

Salvadore Joseph Calabrese, Troy, N.Y., assignor to E. I. Du-Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 298,838
Int. Cl. F16c 33/12
U.S. Cl. 308—241 10 Claims

1. An improved mechanical system comprising a first part presenting an aluminum surface, a second part presenting a second surface in contact with the aluminum surface, and means for inducing and maintaining the two surfaces in sliding contact with each other, the improvement consisting of employing as the first surface an aluminum based surface and as the second surface a metallic surface comprising an alloy containing at least 60 atom percent of at least two heavy metal transition elements, the ratio of the atomic radii of the largest to the smallest transition elements being 1.05 –1.68, and consisting of 10–100 volume percent of a hard phase and 0–90

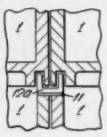


volume percent of a matrix phase which is softer than the hard phase, said hard phase containing a major fraction of Laves phase in such amount as to provide at least 10 volume percent thereof in the alloy.

3,841,725
MULTI-PURPOSE BUILT-UP SHELVING

Heinz Dorner, c/o Verkaufsburo der Eschmann AG, Thun Seestrasse 25, 8702 Zollikon/ZH, Switzerland

Filed Dec. 14, 1972, Ser. No. 315,180
Claims priority, application Switzerland, Dec. 17, 1971, 18523
Int. Cl. A47b 87/00
U.S. Cl. 312—107 6 Claims

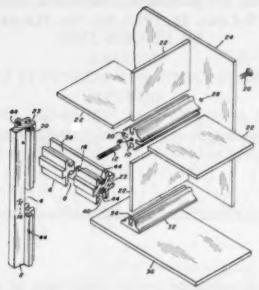


1. In a shelving arrangement; at least one shelf unit having a horizontal bottom wall, a vertical rear wall upstanding from the rear edge of said bottom wall, a pair of vertical side walls upstanding from the side edges of said bottom wall, the upper edges of said side walls and back wall being disposed in the same horizontal plane and said walls being integrally interconnected along the contiguous edges thereof, first means on the upper edges of said side walls and real wall for interfitting locking engagement with complementary shaped means on the bottom of an element which is the same size as the shelf unit when viewed from above and placed on top of the shelf unit, second means on the bottom of said bottom wall in vertical alignment with said first means and complementary in shape to said first means for interfitting locking engagement with complementary shaped means on the top of an element which is the same size as the shelf unit when viewed from above and on which said shelf unit is placed, and at least one upwardly opening recess formed in the upper edge of at least one of said side walls, and a connecting member receivable in said recess and having a pair of legs protruding upwardly above the top of the upper edge of said side wall, said legs adapted for interfitting locking engagement with the element placed on said shelf unit and with a like element placed on a second shelf unit which is disposed in side to side relation with the first mentioned shelf unit.

3,841,726
URN STORAGE ASSEMBLY

Andrew Andros, North Versailles, and Joseph Lukitsch, Pittsburgh, both of Pa., assignors to Jas. H. Matthews & Co., Pittsburgh, Pa.

Filed Apr. 13, 1973, Ser. No. 350,683
Int. Cl. A47f 5/00; F16b 12/02
U.S. Cl. 312—111 **10 Claims**



1. In an urn storage assembly for interring cremated remains wherein said storage assembly includes a plurality of storage units in a generally rectangular array, each of said storage units having a generally rectangular cross section and having spaced-apart side wall portions, a top wall portion, and a bottom wall portion, the improvement comprising:

a lattice-like framework including a plurality of intersecting, rigidly interconnected horizontal and vertical members, each of said members having slots engaging and receiving front edges of said wall portions of said storage unit whereby said lattice-like framework forms a facial array for said storage assembly;

each of said vertical members having recessed portions at the point of intersection with the horizontal members;

each of said horizontal members having recessed portions fitting the recessed portions of said vertical members whereby said vetical and horizontal members are disposed along the plane defined by the outer edge of said wall portions; and

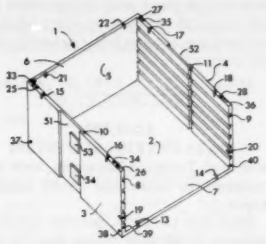
a plurality of elongated structural members each having a plurality of longitudinal slots, said slots having their respective center lines spaced 90° apart and receiving side edges of said wall portions, each of said structural members being rigidly connected to said lattice-like framework perpendicular to both one of said vertical members and one of said horizontal members and extending from the intersection of said members, with said slots in said structural members being coplanar with slots in the respective vertical and horizontal members, whereby said structural members secure said wall portions in a generally rectangular array.

3,841,727
CONVERTIBLE MODULAR FURNITURE - LUGGAGE UNITS

John Peng, 920 Forestwood Dr., Mississauga, Ontario, Canada

Filed May 7, 1973, Ser. No. 358,075
Claims priority, application Canada, Aug. 10, 1972, 149089
Int. Cl. A47b 77/00; F16b 12/00; A47b 47/00
U.S. Cl. 312—111 **16 Claims**

1. In a modular furniture-luggage unit having at least two four-sided receptacles removably mounted together, wherein each of said receptacles comprises a substantially square base wall, two parallel side walls formed at two opposite side edges of said base wall, and a back wall formed at one other side edge of said base wall, said back wall being perpendicular and integrally joined to said side walls, said side walls having top edges and front edges, a plurality of complementary mounting means formed in said top edges and front edges of said side walls and the outside surface of said base wall and back wall whereby said receptacles are selectively engageable by engaging the complementary mounting means in selected front or top edges of said side walls or selected outside surface of said base wall or back wall of one receptacle with the complementary mounting means in selected front or top edges of the side

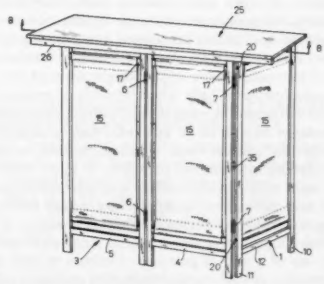


walls or the outside surface of the base wall or back wall of the other receptacle, at least one horizontal track means provided on the inside surface of said side walls, said horizontal track means being parallel to said base wall, at least one vertical track means provided on the inside surface of said side wall, said vertical track means being perpendicular to said horizontal track means, and securing means formed on the outside surface of said side walls operative for firmly securing said receptacles in a fixed engagement.

3,841,728
COLLAPSIBLE BAR

Walter F. Petersen, and John B. Gittings, both of Racine, Wis., assignors to Gold Medal Inc., Racine, Wis.

Filed Sept. 18, 1973, Ser. No. 398,316
Int. Cl. A47b 96/18
U.S. Cl. 312—140.2 **6 Claims**



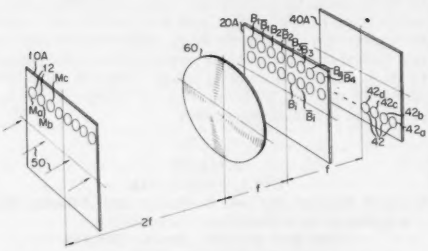
1. A collapsible bar comprising a pair of normally upright front walls, left sidewall and right sidewall, said walls all being of generally similar construction, size and shape, said front walls being hinged together at their adjacent edges and said sidewalls being hinged to opposite and adjacent edges of said front walls whereby said walls can all be folded together in accordian fashion in a storage position, said walls each comprising a generally rectangular framework having an open center, replacable panel members located in said rectangular frames, said bar also including a generally horizontal one-piece counter abuttable against the upper ends of said walls for support thereby, means on the underside of said counter for releasably holding said sidwwalls, whereby said counter

can be lifted free of said sidewalls, guide rail means on the underside of said counter for guiding and abutting against said front walls, a one-piece interior shelf of a size and shape complementing the interior configuration of said walls when the latter are in assembled relationship with said counter, interengaging means carried by said interior shelf and said walls for releasably supporting said interior shelf against said walls and for rigidifying the latter in respect to each other and holding them in assembled relationship with said counter, said interior shelf being of a width which is less than the width of said counter and nestable in said counter when in said storage position, and the width of said walls when folded in accordian fashion relative to one another being generally the same as the width of said counter.

3,841,729
DATA RETRIEVAL SYSTEM

Shigeru Ando, and Takayuki Miyazawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1973, Ser. No. 324,893
Claims priority, application Japan, Jan. 20, 1972, 47-7943
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



1. A data retrieval system comprising, in combination:

a. a planar recording medium having a plurality of diffraction means for diffracting light disposed thereon in a matrix of rows and columns, each of said diffraction means being illuminated in use by monochromatic light, each of said diffraction means representing an *n*-bit binary numer and each of said diffraction means diffracting siad monochromatic light incident thereon into *n* rays of monochromatic light wherein each of said *n* diffracted rays diffracted by each of said diffraction means is representative of one bit of said *n*-bit binary number;

b. a planar opaque mask disposed parallel to said planar recording medium and receptive of said *n* diffracted rays of light diffracted by each of said diffraction means, each of said diffraction means having means diffracting rays representative of corresponding bit positions of said *n*-bit binary numbers in directions to strike said opaque mask in one of a pair of positions common to said rays representative of said corresponding bit positions wherein one of said pair of common positions corresponds to binary zero and the other of said common positions corresponds to binary one, said mask being provided with apertures disposed to allow at selected ones of said common positions diffracted rays incident at said apertures to pass through said mask thereby defining information to be retrieved by allowing diffracted rays representative of binary numbers having values defined by the positions of said apertures to pass through said opaque mask;

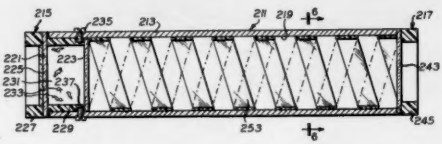
c. optical focusing means focusing diffracted light rays passin through said apertures in said opaque mask to a plane optically conjugate to said planar recording medium, thereby establishing a one-to-one correspondence between said optically conjugate plane and said diffraction means on said planar recording medium; and

d. optical readout means disposed in said conjugate plane in a matrix corresponding to said matrix of diffraction means on said recording medium for developing signals in response to diffracted rays of light incident thereon thereby indicating which of said diffraction means represents a binary number having said information to be retrieved.

3,841,730
IMAGE PRODUCING DEVICE

Judith Karelitz, 430 E. 86th St., New York, N.Y. 10028

Filed Dec. 18, 1972, Ser. No. 316,099
Int. Cl. G02b *27/08*
U.S. Cl. 350—5 **8 Claims**

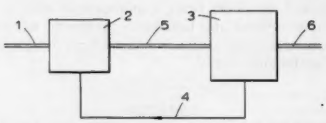


1. An image producing device comprising an elongate hollow member having arcuate internal means for causing interior reflection extending substantially the entire length thereof, light transmitting objective means at one end of said elongate member in light transmitting communication with said interior reflecting means, and viewing means at the other end of said elongate member communicating with said reflecting means, said reflecting means comprising substantially the entire inner surface of said elongate hollow member and being formed of a spirally wound reflective sheet comprising a plurality of turns of said sheet, with each successive turn overlapping at least a portion of the previous turn and being telescoped within the next successive turn.

3,841,731
IMPROVEMENTS IN OR RELATING TO LIQUID CORE DIELECTRIC WAVEGUIDES

John E. Midwinter, Woodbridge, England, assignor to The Post Office, London, England

Filed May 24, 1973, Ser. No. 363,527
Claims priority, application Great Britain, June 14, 1972, 27854/72
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **2 Claims**



1. In an optical transmission system in which radiation having a finite band width propagates along a dielectric optical waveguide in a number of different modes, said dielectric optical waveguide having a liquid core and solid cladding materials with refractive indices dependent on temperature, the refractive indices of said core and cladding material having substantially different rates of variations with temperature, and a portion of said dielectric optical waveguide having a means to vary its temperature, a method of limiting the number of modes of propagation through the waveguide including the steps of:

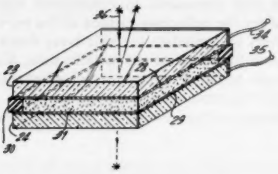
a. defining a number of contiguous ranges of temperature for said portion of dielectric optical waveguide, each range of temperature being chosen so that as the value of temperature for said portion of dielectric optical waveguide changes from one range of temperature to an immediately adjacent range of temperature, a mode, characteristic of said one range of temperature ceases to propagate as a guided mode in said portion of dielectric optical waveguide; and

controlling the value of temperature for said portion of dielectric optical waveguide to lie within one of said contiguous ranges of temperature.

3,841,732
DIPOLAR ELECTRO-OPTIC STRUCTURES AND METHOD

Alvin M. Marks, 153-16 10th Ave., Whitestone, N.Y. 11357

Filed Mar. 4, 1970, Ser. No. 16,280The portion of the term of this patent subsequent to May 19, 1987, has been disclaimed.
Int. Cl. G02f *1/30, 1/38*
U.S. Cl. 350—160 R **21 Claims**

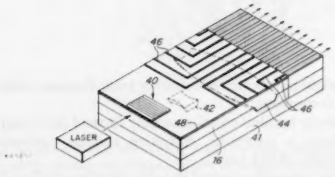


1. A light controlling device comprising in combination a transparent suspending medium, a plurality of submicron dipole members rotatably carried within the medium to form a suspension, spaced transparent sheets to contain the suspension, opposed electrodes disposed on each side of said suspension, one of said electrodes being a transparent conductive film and the other of said electrodes being reflective, and means to apply an electric field across said electrodes to control the disposition of the dipole suspension from light absorptive in a random state;to transparent in an aligned state.

3,841,733
OPTICAL WAVEGUIDE SYSTEM FOR PRODUCING A LINE OF MODULATED RADIATION DATA

John F. Ebersole, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Dec. 5, 1973, Ser. No. 421,876
Int. Cl. G02f *1/36;* **G01d** *9/42*
U.S. Cl. 350—160 R **18 Claims**



1. A system for forming a line of modulated radiation data and comprising:

a. a radiation waveguide means for guiding radiation therein, said waveguide means having a thickness and width at its output such that it forms a line of radiation across its width at its output;

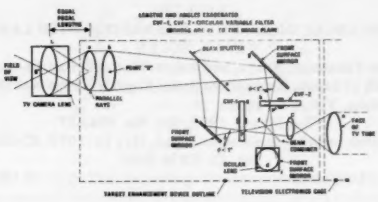
b. means for introducing radiation into said radiation waveguide means; and

c. a plurality of electro-optic modulators spaced across the width of the output of said waveguide means for selectively modulating radiation in said waveguide means in accordance with electrical signals applied to each electro-optic modulator, whereby a line of modulated radiation data is produced at the output of said waveguide means.

3,841,734
OPTICAL CONTRAST ENHANCEMENT SYSTEM

David W. Kermode, Ridgecrest, Calif., assignor to The United States as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1972, Ser. No. 242,514
Int. Cl. G02b *5/28*
U.S. Cl. 350—166 **1 Claim**



1. Optical contrast enhancement means comprising:

filter means changing the reflected light of different wavelengths emanating from an object and passing through said filter;

detector means receiving light energy passing through said filter means;

said filter means comprising two orthogonal circular variable interference filters;

a beam splitter in the optical path between said object and said detector operable to divide the light beam into first and second orthogonal secondary beams;

means for combining said secondary beams;

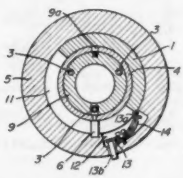
one of said variable filters being situated athwart each said secondary beam; and

image inversion means operable to correctly orient the image components of the optical beam for viewing.

3,841,735
ZOOM LENS SYSTEM OPERABLE FOR EXTREMELY SHORT DISTANCE PHOTOGRAPHY

Toru Katagiri, Nagano-ken; Akio Ito, Chino-shi, and Toshiyuki Inoue, Suwa-shi, all of Japan, assignors to Sanko Kogaku Kogyo Kabushiki Kaisha, Nagano-ken, Japan

Filed July 17, 1972, Ser. No. 272,522
Int. Cl. G02b *7/10*
U.S. Cl. 350—187 **1 Claim**



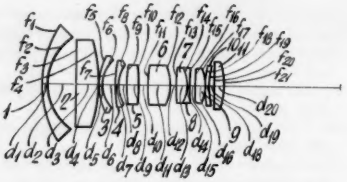
1. A zoom lens system comprising a front and rear movable lens group disposed between a front focusing lens used only

for focusing and a relay lens, said zoom lens system comprising a cam cylinder having two cam grooves formed thereon for shifting the rear movable lens group along the optical axis while holding the front movable lens group stationary at the limit position for wide angle photographing, a fixed main cylinder provided around said cam cylinder coaxially therewith and having formed therein a cutout for controlling the range of rotation of a zoom ring said zoom ring being provided around said main cylinder coaxially therewith and sljdable relative thereto, said zoom ring and said cam cylinder being integrally connected by a pin provided through said cutout of the main cylinder, said zoom ring being formed with a recess at a suitable location of the inner wall thereof opposite to the cutout of said main cylinder, and a locking member provided in said recess and having a locking portion selectively rotatable between a position to project into said cutout and a position not to project into said cutout.

3,841,736
WIDE ANGLE OBJECTIVE LENS SYSTEM WITH LARGE BACK FOCUS

Yasuo Takahashi, Tokyo, and Sadao Okudaira, Ranzan-machi, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 2, 1973, Ser. No. 356,687
Claims priority, application Japan, May 11, 1972, 47-46604
Int. Cl. G02b *9/00*
U.S. Cl. 350—214 **2 Claims**



1. A wide angle lens system comprising eleven lenses consecutively designated from the front lens on the object side to the rear lens on the image side as the first to the eleventh lens, the seventh and eighth lenses being joined at their confronting mating faces to define a singly designated face and form a doublet, said lenses having the following dimensions and relationships:

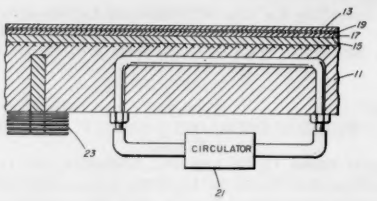
r_1	196.25	d_1	9.57	n_1/ν_1	1.80610/40.8
r_2	95.73	d_2	47.09		
r_3	3033.14	d_3	43.17	n_2/ν_2	1.53172/48.9
r_4	−342.39	d_4	0.65		
r_5	130.31	d_5	7.03	n_3/ν_3	1.69350/53.3
r_6	57.80	d_6	18.81		
r_7	246.94	d_7	7.45	n_4/ν_4	1.71300/54.0
r_8	72.22	d_8	14.74		
r_9	235.07	d_9	18.11	n_5/ν_5	1.74077/27.8
r_{10}	−257.57	d_{10}	18.97		
r_{11}	272.12	d_{11}	36.59	n_6/ν_6	1.60562/43.7
r_{12}	−86.37	d_{12}	13.70		
r_{13}	312.47	d_{13}	18.11	n_7/ν_7	1.51823/59.0
r_{14}	−82.41	d_{14}	5.76	n_8/ν_8	1.83400/37.2
r_{15}	894.12	d_{15}	9.43		
r_{16}	−1416.27	d_{16}	16.64	m_9/ν_9	1.69350/53.3
r_{17}	−110.97	d_{17}	0.40		
r_{18}	−887.39	d_{18}	5.27	$n_{10}/\nu 10$	1.80518/25.4
r_{19}	118.00	d_{19}	10.71		
r_{20}	−1366.54	d_{20}	16.31	$n_{11}/\nu 11$	1.64850/53.0
r_{21}	−98.62				

wherein r_j is the radius of curvature of the j-th lens face, d_j is the axial distance between the j-th face and the next rearwardly succeeding face, N_i is the d-line refractive index of the i-th lens and ν_i is the Abbe's number of the i-th lens.

3,841,737
LAMINATED MIRROR

Werner R. Rambauske, Carlisle, and John J. Grabowski, Andover, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 3, 1972, Ser. No. 268,271
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **6 Claims**



1. A mirror comprising:

a. a metallic base having one surface thereof optically smooth and contoured to correspond with the shape desired for the reflecting surface of the mirror;

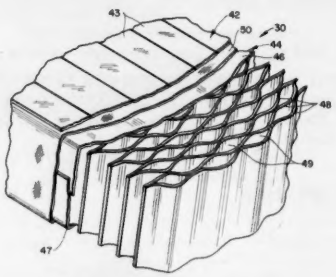
b. a primary intermediate metallic layer fused to the optically smooth surface of the metallic base, the material of such layer having a higher coefficient of thermal expansion than the material of such base; and

c. a reflecting surface overlying the primary intermediate layer.

3,841,738
CURVED PAPER PANEL REFLECTIVE STRUCTURE

Harry W. Caplan, 3397 E. Monmouth Rd., Cleveland Heights, Ohio 44118

Filed Oct. 19, 1973, Ser. No. 407,943
Int. Cl. G02b *5/10*
U.S. Cl. 350—293 **7 Claims**



1. A lightweight parabolic reflector for solar-thermal collector modules. comprising:

a. an adhesively bonded panel assembly formed from paper and defining a parabolic mounting surface extending longitudinally of the panel;

b. a reflective material adhered to said mounting surface for support and being operable to reflect incident solar radiation toward a common focal axis extending longitudinally of said panel assembly;

c. said panel assembly including first and second sheets of paper positioned in uniformly spaced relationship to define the thickness of said panel assembly, and a cellular paper core of uniform thickness interposed between and

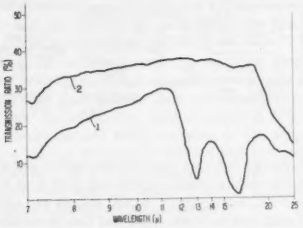
adhered to said first and second sheets, said core being formed from strips of paper positioned in side-by-side relationship and adhered together at spaced intervals to define an array of open ended cells closed at opposite ends by said sheets.

3,841,739

USE OF CU-AS-SE GLASS TO TRANSMIT LONG WAVELENGTH RADIATION

Yoshiyuki Asahara, Kanagawa, and Tetsuro Izumitani, Tokyo, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed Apr. 27, 1973, Ser. No. 354,975
Claims priority, application Japan, Oct. 2, 1972, 47-98807
Int. Cl. G03c 3/24; G02b 1/00
U.S. Cl. 350—320 **1 Claim**



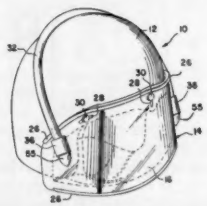
1. The process of using a glass consisting of 12–40 atomic percent of Cu, 25–60 atomic percent of As and 25–60 atomic percent of Se to transmit infrared radiation at 12.8 and 16 microns and up to a transmitting edge of 20 microns.

3,841,740

CHANGEABLE FLUID FILTER EYEGLASSES

Mount Lee Lacy, Jacksonville, Fla., assignor to Mount Lacy Enterprises Inc., Salt Lake City, Utah

Division of Ser. No. 129,612, March 30, 1971, which is a continuation of Ser. No. 718,182, April 2, 1968, abandoned, which is a continuation-in-part of Ser. No. 628,984, April 6, 1967, abandoned. This application Dec. 14, 1971, Ser. No. 208,017
Int. Cl. G02c 7/10; G02b 5/24
U.S. Cl. 351—44 **9 Claims**



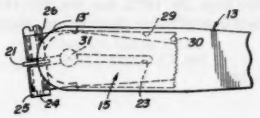
1. Light energy absorbing and filtering eyeglasses comprising stem pieces, two lenses each of which is formed from two spaced transparent plates defining a closed thin cavity therebetween and a frame to the ends of which are attached the stem pieces, said frame defining two lens openings containing said lenses and at least two liquid storage compartments, one for each lens, communicating with said cavity, said cavity and compartment containing only two bodies of immiscible liquids hermetically sealed in the frame and lens, each body of liquid having a different specific gravity and ray absorptive and filtering properties and valve means for selectively communicating each cavity with one of said compartments whereby when the valve means is open and the device is tilted, gravity movement of the heavier liquid produces an exchange of liquids between the cavity and the compartment, and when the valve means is closed, the changed liquid is sealed in the cavity.

3,841,741

EYEGLASS FRAME

Alfred Vischer, Jr., 6111 E. San Marino St., Tucson, Ariz. 85715

Continuation-in-part of Ser. No. 100,142, Dec. 2, 1970, abandoned. This application Sept. 21, 1971, Ser. No. 182,389
Int. Cl. G02c 5/20, 5/22
U.S. Cl. 351—120 **12 Claims**



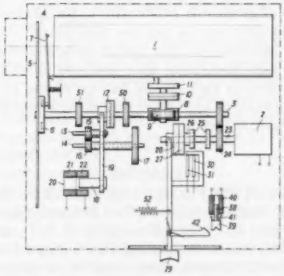
1. In an opthalmic mounting, the combination comprising
an integral lens frame having therein a generally cylindrical recess open along one elemental side through an angle less than 180°,
a temple member,
a hinge piece extending from said temple member and having an end portion substantially in the shape of a cylindrical pivotally disposed in said recess,
said recess is semicylindrical with an intermediate arcuate groove therein,
said end of said hinge piece is provided with a slot,
a washer is disposed in said slot and said groove, and
a fastener extends through said end and said washer for securing said washer to said hinge piece.

3,841,742

METHOD FOR PREPARING A LIMITED FILM LENGTH

Peter Revy von Belvard, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 26, 1972, Ser. No. 301,078
Claims priority, application Austria, Oct. 28, 1971, 9327/71
Int. Cl. G03b 21/36
U.S. Cl. 352—91 **6 Claims**



1. A method to carry out multiple exposures of a motion picture film strip enclosed in a cartridge having take-up means to be driven in a normal take-up direction, said take-up means having a rewind stop, including the steps of:

a. exposing a first scene to be photographed on a limited portion of said film strip while moving said film strip in forward direction;
b. moving the film backward said limited portion, and
c. exposing a second scene to be photographed while moving the film forward;

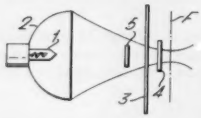
the method comprising further:

applying torque to said take-up means in rewind direction by drive means during exposure of the first scene and also during the step of moving the film backwards, thereby providing a relative movement between the take-up means with its rewind stop and said drive means.

3,841,743
CINEMATOGRAPHIC PROJECTOR

Jean A. Thevenaz, Grandson, Switzerland, assignor to Bolex International SA, Saint Croix, Switzerland

Filed Sept. 28, 1972, Ser. No. 293,150
Claims priority, application Switzerland, Sept. 27, 1971, 14147/71
Int. Cl. G03b *21/00*
U.S. Cl. 352—198 **2 Claims**



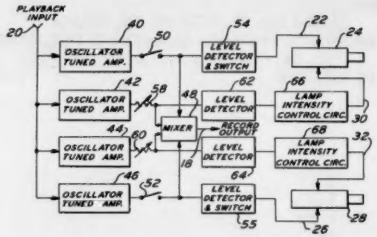
1. A cinematographic projector capable of several modes of projection including still projection and normal projection having a light source, a dichroic reflector behind said light source for transmitting a portion of the infra-red rays while reflecting visible rays toward a film gate, means for advancing the cinematographic film in front of the film gate, a filter in front of said light source for removing an additional portion of the infra-red rays, an objective lens for forming an image of said cinematographic film on a projection screen, said objective lens tending to diffuse the light and infra-red rays from said light source in an irregular pattern so that the intensity of these rays in the central region of each film frame would be stronger than that on the outer regions thereof, and control means located between said light source and the film gate arranged to intercept the central light and infra-red rays for changing said irregular intensity pattern in such a manner that the maximum of intensity is displaced from the central region of each film frame to the outer regions thereof, said control means comprising an opaque screen means fixedly positioned in all modes of projection in the path of the central light rays between said light source and the film frame whereby said central light and infra-red rays are substantially blocked prior to reaching said film frame such that the intensities of the visible and infrared rays in said central region of each film frame are between 40 and 90 percent of the intensities thereof along said outer regions.

3,841,744
MULTIPLE SLIDE PROJECTOR CONTROL SYSTEM

Lawrence M. Rubin, Souderton, Pa.; Richard Eaton, Rochester, and Peter L. Chapin, Ilion, both of N.Y., assignors to Lawrence M. Rubin, Souderton, Pa.; Richard Eaton, Rochester; Peter L. Chapin, Ilion, both of, N.Y. and Stanley Feingold, Lansdale, Pa., part interest to each

Filed Sept. 1, 1971, Ser. No. 176,958
Int. Cl. G03b *31/06*
U.S. Cl. 353—15 **5 Claims**

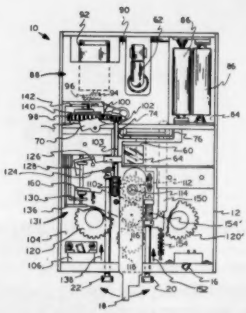
1. Apparatus for providing a composite signal for recording on a single track of a recording medium, said composite signal being comprised of slide change and lamp intensity control signals for a first and a second slide projector comprising; first, second, third and fourth oscillator means for producing first, second, third and fourth frequency signals, respectively, each of said first second, third and fourth frequency signals being at a different frequency, said first and second oscillator means being provided with switching means for enabling an output from said first and second oscillator means to provide slide change signals for said first and second slide projectors, respectively, said third and fourth oscillator means being provided with means for varying their respective outputs to provide lamp intensity control signals for said first and second slide projectors, respectively, mixer means for receiving the outputs of said first, second, third and fourth oscillator means and for providing a composite signal to be recorded on a single track and first and second level detector and switch means for receiving the output of said first and second oscillator means to provide a slide change signal to said first and second slide projectors during recording of the output of said first and second oscillator means.



3,841,745
PORTABLE MICROFILM VIEWER

Morton Kaye, Stamford, Conn., and Marvin I. Radlauer, 2 Mistletoe Dr., Matawan, N.J., assignors to said Radlauer, by said Kaye

Division of Ser. No. 194,724, Nov. 1, 1971, Pat. No. 3,791,778. This application Sept. 12, 1973, Ser. No. 396,418
Int. Cl. G03b *21/11*, *21/30*
U.S. Cl. 353—26 **7 Claims**



1. A control for a microfilm viewer comprising

a housing including a microfilm viewing port, said housing being shaped to operatively support a cassette containing microfilm bearing a plurality of image frames, and means for driving the microfilm in the cassette past the film viewing port,

a film gate located alongside the film viewing port and pivotally mounted to the housing for movement against the film and away from the viewing port,

a film claw shaped to positively engage the microfilm, said film claw being movably mounted to the housing and coupled to the driving means for a repeatable motion selected to advance the microfilm a distance corresponding to a dimension of an image frame,

a single frame control wheel driven into rotation by the driving means and having a stop,

a stop shaft disposed to normally engage the single frame control wheel stop and mounted to the housing for movement towards and away from the single frame control wheel,

a control switch mounted adjacent the stop shaft for actuation thereby upon release movement of the stop shaft away from the single frame control wheel stop,

a single frame control lever projecting from the housing and coupled to the stop shaft to initiate release movement and enable said driving means to actuate the film claw for single frame advancement thereof,

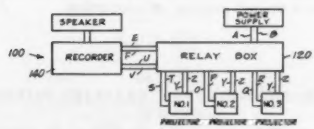
a continuous film advance control lever projecting from the housing and disposed for movement towards and away from the film claw and the film gate to separate the film claw from the microfilm, said continuous film advance control lever further being coupled to the stop shaft to initiate a release movement thereof and actuation of the control switch for a continuous advance of the microfilm commensurate with the duration of the actuation of the continuous film advance control lever.

3,841,746

CONTROL FOR SYNCHRONIZING PROJECTORS WITH AN AUDIO PROGRAM

Arthur B. Chase, San Francisco, Calif., and Paul C. Miller, South Euclid, Ohio, assignors to Arthur B. Chase, San Francisco, Calif. and Paul C. Miller, Euclid, Ohio, part interest to each

Filed Feb. 26, 1973, Ser. No. 335,653
Int. Cl. G03b *31/06, 21/16*
U.S. Cl. 353—15 **12 Claims**



1. A control unit for controlling a plurality of slide projectors, each having a lamp, a blower and a slide change mechanism, in response to slide change pulses and an off pulse recorded on a magnetic tape and wherein the control unit is constructed to be connected to the projectors and to the output of a playback recorder which plays the tape,

said control unit comprising,

frequency sensing means for sensing each slide change pulse and the off pulse,

a plurality of slide change relay means, each operatively associated with the frequency sensing means for actuating the slide change mechanism of a particular projector in response to the sensing of a slide change pulse having a frequency corresponding to that projector,

lamp relay means operatively associated with the frequency sensing means for shutting off all of the projector lamps immediately on the sensing of the off pulse,

blower relay means operatively associated with the frequency sensing means for shutting off all of the blowers on the sensing of the off pulse,

time delay means for delaying the actuation of the blower relay means for a fixed period of time after the sensing of the shutoff pulse to permit the blowers to cool the projector lamps, and

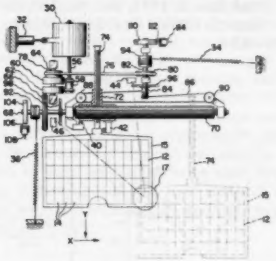
a line voltage relay means operatively associated with the blower relay means and wherein the time delay means includes a holding circuit which holds the line voltage relay closed for said fixed period of time.

3,841,747

APPARATUS INCLUDING RANDOM ACCESS POSITIONING MEANS

Donald C. Peroutky, and Charles R. Stein, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 9, 1973, Ser. No. 377,418
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **18 Claims**



1. Apparatus for use with an object having a plurality of areas within a two-dimensional coordinate system and identified by corresponding addresses along the respective dimensions comprising:

a. means for providing area preselection signals representative of the address of a preselected one of said areas,

b. a fixed work station,

c. positioning means effective when actuated for moving said object relative to said work station in the directions of said dimensions to any one of a plurality of positions in each of which a separate one of said areas is positioned at said work station,

d. drive means effective each time when operated to actuate said positioning means for initially moving said object away from one of said positions to a reference reset position and for automatically thereafter moving said object away from said reference reset position towards another of said positions which is predetermined by the address of said preselected area,

e. said drive means including

i. an electric motor,

ii. coupling means for releasable engagement with said motor for coupling said motor to said positioning means, said coupling means being operable when in engagement with said motor to actuate said positioning means to move said object to said reference reset position,

iii. limit switch means positioned for actuation in response to arrival of said object at said reference reset position to effect disengagement of said motor and said coupling means, and

iv. spring means connected to said coupling means and effective in response to disengagement of said motor and said coupling means to actuate said positioning means to move said object away from said reference reset position,

f. means for initiating operation of said drive means,

g. means for generating and counting control signals in response to movement of said object away from said reference reset position to continuously identify the addresses of those areas arriving at said work station, and

h. control means for comparing said area preselection signals and said control signals and for automatically terminating movement of said object upon its arrival at said another position in response to occurrence of coincidence between said area preselection signals and said control signals to thereby position said preselected area at said work station.

3,841,748

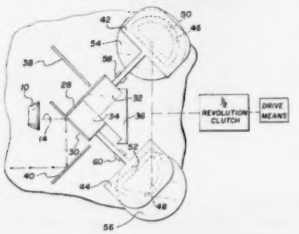
PROJECTOR LAP DISSOLVE DEVICE

William P. Ewald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 7, 1971, Ser. No. 150,484

Int. Cl. G03b *21/14, 21/28, 21/36*

U.S. Cl. 353—83 **6 Claims**



1. In projecting apparatus having (1) means defining first, second and third light paths, (2) means for supporting a film transparency in each of said first and second light paths and (3) optical means for forming a projected image of the supported transparencies in an image plane, a device for dissolving the projected image of one supported transparency into the projected image of the other supported transparency, said device comprising:

illumination means for directing light rays along said third light path;

first and second mirrors each having first positions occupying different portions of said third light path for respectively reflecting a portion of said light rays along said first and second light paths, whereby the projected images from said pair of film transparencies are of substantially equal brightness when said mirrors are both in their first positions;

means for moving said first mirror to a second position while said second mirror remains in its first position to (1) gradually block an increasing number of said light rays from said second mirror and (2) reflect the blocked light rays along said first light path; and

means for moving said second mirror to a second position while said first mirror remains in its first position to (1) gradually block an increasing number of said light rays from said first mirror and (2) reflect the blocked light rays along said second light path.

3,841,749

SLIDE PROJECTOR MAGAZINE POSITIONING MEANS

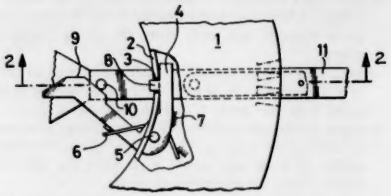
Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed June 1, 1973, Ser. No. 365,986

Claims priority, application Germany, June 12, 1972, 2228603

Int. Cl. G03b *23/06*

U.S. Cl. 353—117 **4 Claims**



1. A slide projector for use with a circular slide magazine rotatable with respect to the projector to bring successive slides to a position to be transferred from the magazine to a projection position within the projector, said projector comprising means for holding a circular magazine, and movable detent means for engaging abutment means in the form of a notch on the magazine when the magazine is rotated, to determine a particular position of rotational orientation of the magazine with respect to the projector, wherein said detent means includes a movable member (**13**) having a portion (**8**) in position to drop into said notch (**3**) of said magazine when said notch comes opposite said portion during rotation of said magazine, a light spring (**19**) biasing said movable member (**13**) to a position wherein said portion (**8**) engages a surface of said magazine in which said notch (**3**) is located, a stronger spring (**18**) biased to overcome the force of said light spring (**19**) and to keep said portion (**8**) disengaged from said surface, and a manually operable member (**15, 16**) shiftable to a position overcoming the force of said stronger spring (**18**) on said light spring and thereby causing said light spring (**19**) to move said portion (**8**) into engagement with said surface of said magazine, and to enter said notch (**3**) upon turning of said magazine to a desired position of orientation.

3,841,750

ELECTROPHOTOGRAPHIC TRANSFER-PRINTING DEVICE

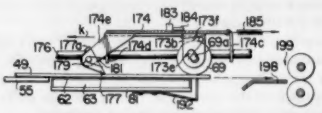
Kenji Isonaka, Tokorozawa; Saburo Hokari, Kawasaki; Tatsuya Watanabe, Yokokama, and Masamichi Furukawa, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,508

Claims priority, application Japan, May 23, 1972. 47-51010

Int. Cl. G03g *15/18, 15/00*

U.S. Cl. 355—3 R **10 Claims**



1. An electrophotographic transfer-printing device for transferring an electrostatic latent image formed on a planar photoconductive material layer of a photoreceptor onto a dielectric material layer of a card material comprising: means

for positioning the photoreceptor and the card material against each other with the photoconductive material layer of the photoreceptor facing the dielectric material layer of the card material, a transfer-printing roller, means for moving the transfer-printing roller in rolling motion over the combination of the card material and the photoreceptor to press the card material against the photoreceptor, said transfer roller starting its rolling motion from an initial position at one end of the combination of the card material and the photoreceptor, and a resilient stripper continuously engaging the end of the card material adjacent the initial position of the transfer roller and continuously biasing the last recited end of the card material in a direction away from the photoreceptor to gradually raise the card material from the photoreceptor as the rolling motion of the transfer-printing roller proceeds from the initial position toward an end position, thereby gradually peeling off from the photoreceptor the portions of the card material which have received the transfer-printed latent image from the photoreceptor.

3,841,751

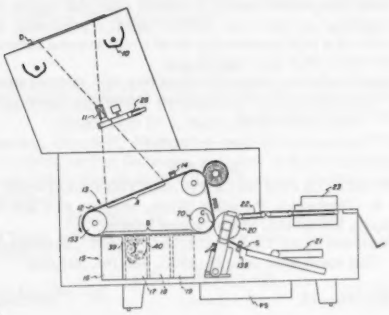
ELECTROSTATIC COLOR REPRODUCTION METHOD

Vaidevutis C. Draugelis; William R. Hartman, Jr., both of Rochester; Michael J. Langdon, Webster, and Alan F. McCarroll, Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 830,280, June 4, 1969, Pat. No. 3,724,943. This application May 17, 1972, Ser. No. 254,130

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **7 Claims**



1. A method for producing a multi-color reproduction of an original comprising the steps of:

sequentially forming a series of electrostatic latent images of the original on the surface of a photoconductive plate member adapted for movement along a predetermined path, each of said images corresponding to a light pattern of a different color,

sequentially developing said images by advancing each image into contact with an applicator for developing material having a color relative to the color of which the respective image was formed, said advancement is performed at a predetermined time relative to the formation of the corresponding latent image, and

sequentially transferring the developed images to a support material in unfused superimposed relationship.

3,841,752

LIGHT SOURCE FOR COPYING MACHINE

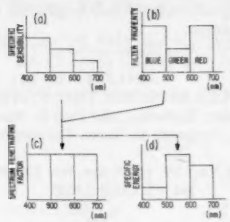
Yasuhiko Terajima, Chigasaki; Ryuzo Okada, Yamato, and Kiyoshi Horie, Ebina, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,561

Claims priority, application Japan, Aug. 18, 1972, 47-82105

Int. Cl. G03g *15/04*

U.S. Cl. 355—4 **9 Claims**



1. In a copying machine for reproducing an original comprising a light sensitive material having a predetermined sensitivity over a given wavelength range, means for uniformly charging said light sensitive material, means including a light source for image exposing the uniformly charged light sensitive material to form a latent image thereon, and means for developing said latent image, said light source comprising:

a plurality of lamps where each of said lamps produces light within a different range of wavelengths and simultaneously illuminates said original, the intensity of the light produced by each said lamp being such that the total response distribution of said light sensitive material to said light source is substantially uniform over the entire range of visible light.

3,841,753

SCANNING SYSTEM

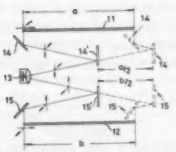
Masaya Ogawa, Toyokawa City, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 13, 1972, Ser. No. 271,308

Claims priority, application Japan, Aug. 2, 1971, 46-58083; Aug. 2, 1971, 46-58084

Int. Cl. G03g *15/04*

U.S. Cl. 355—8 **11 Claims**



1. A slit exposure optical system for a photographic copying apparatus in which an original is arranged in parallel with a photosensitive member in face-to-face relationship comprising:

a stationary light focussing objective,

a first movable reflector means for scanning an image of the original,

a second movable reflector means oriented to reflect the image from said first movable reflector means to said objective,

a third movable reflector means oriented to reflect the image from said objective,

a fourth movable reflector means for scan-projecting the image of said original reflected from said third movable reflector means to said photosensitive member, and

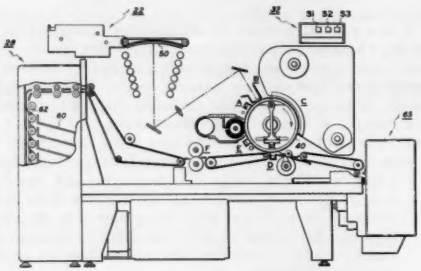
means for synchronously moving said first, second, third and fourth movable reflector means in the same direction along paths parallel with respect to said original and photosensitive member, wherein the rate of movement of said second movable reflector means is half that of said first movable reflector means in scanning said original, and the rate of movement of said third movable reflector means is half that of said fourth movable reflector means for scanning the image of said original on to said photosensitive member.

3,841,754

DUPLEX REPRODUCTION SYSTEM

Edward E. Drexler, Rochester, and Paul D. Norder, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1973, Ser. No. 392,582
Int. Cl. G03g *13/00*
U.S. Cl. 355—17 **4 Claims**



1. An improved duplex reproduction system producing collated duplex copy sets comprising:

document feeding means for feeding a stack of documents in seriatim to the platen of a copy processor,

copy processor means for copying each document a predetermined number of times,

sorter means including a plurality of trays each having an associated gate at the inlet thereof for opening the tray to receive copy sheets from said processor means,

and

circuit means for disabling said gates on the first pass of copy sheets through said copy processor means to said sorter means and then energizing said gates on the second pass to distribute copy sets without rearranging documents or copy sheets.

3,841,755

DOPPLER EFFECT TELEMETER INCLUDING FREQUENCY SHIFTING

Hubert Debart, Meudon, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Dec. 4, 1972, Ser. No. 312,007
Claims priority, application France, Dec. 3, 1971, 71.043503
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **5 Claims**

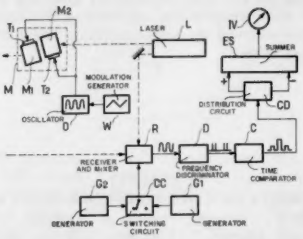
1. A DOPPLER effect and modulated frequency telemeter comprising:

a. scanning means for causing an alternate scanning signal having an adjustable frequency to be propagated towards a target capable of reflecting that scanning signal, by sending back, towards the telemeter, a frequency shifted response signal resulting from reflection of that scanning signal;

b. modulation generator means for controlling said scanning means by a modulation signal so as to create a variation in the frequency of the said scanning signal according to a predetermined variation law as a function of time;

c. receiving means, sensitive to the frequency shift between said response signal and said scanning signal, for supplying a speed indication signal proportional to that shift;

d. wherein said receiving means comprises a frequency comparator supplying a pass signal each time the frequency of the said response signal is equal to a predetermined reference frequency, the said predetermined frequency variation law being a periodic and alternate succession of ramps of two different types, that is, of ramps of two different slopes making the frequency of the said scanning signal vary between a low frequency and a high frequency, said reference frequency being chosen such that the time interval between two successive passes of the frequency of said scanning signal through that reference frequency be equal to the half-cycle of that succession of ramps;



e. time comparator means, receiving said pass signals for supplying at least one interval signal representing the value of a pass interval, that is, of a time interval between two successive pass signals; and

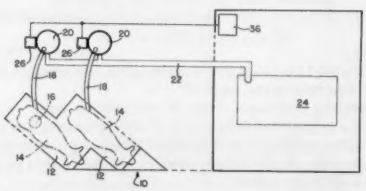
f. speed indicator means for receiving said interval signal and supplying a speed indication dependent on the value of that interval signal.

3,841,756

APPARATUS FOR MILK PRODUCTION ANALYSIS

Peter S. Grochowicz, Puyallup, Wash., assignor to Clark M. Runyan, Ellensburg, Wash., a part interest

Continuation of Ser. No. 141,758, May 10, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,008
Int. Cl. G01n *21/24*
U.S. Cl. 356—72 **12 Claims**



1. An apparatus for analyzing the milk production of a plurality of cows being milked at a plurality of milk stations in a milk parlor, wherein an individual cow's milk production is collected through a respective containing transfer means, with the milk from several transfer means being transferred to a bulk tank, said apparatus comprising:

a. a plurality of milk analyzing units at respective milking stations and operatively connected to a respective transfer means, each unit comprising:
   1. a butterfat sensing device operatively connected to its respective transfer means and arranged to provide a voltage signal having a proportional relationship to butterfat content of milk in its respective transfer means,
   2. a leukocyte sensing device operatively connected to its respective transfer means and arranged to provide a voltage signal having a proportional relationship to leukocyte content of milk in its respective transfer means, and
   3. a quantity sensing device operatively connected to its respective transfer means and arranged to provide a voltage signal having a proportional relationship to quantity of milk collected through its respective transfer means,

b. a plurality of cow identification means, each at a respective milk station by which an individual identification of a cow whose milk production is being collected can be entered,

c. a master unit to receive informational inputs from each of said analyzing units and each of said cow identification means and to present an informational output including each cow's identification with corresponding butterfat, leukocyte content and quantity of each cow's milk production,

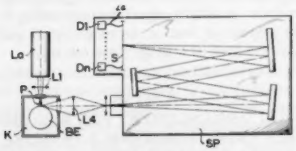
d. means to transmit signals from said analyzing units and cow identifying means to said master unit, and

e. activating means at each station, each of which activating means is operatively connected to its respective cow identifying means and also operatively connected to its respective butterfat sensing device, leukocyte sensing device and quantity sensing device in a manner that operation of said activating means causes transmission through said transmitting means to the master unit the correlated signals of its respective butterfat sensing device, leukocyte sensing device, quantity sensing device and cow identifying means.

3,841,757
METHOD OF DISTINGUISHING BETWEEN FUEL AND/OR BREEDER ELEMENTS INTENDED FOR OR INSERTED IN A NUCLEAR REACTOR

Theodor Overhoff, Niederzier, and Hermann-Josef Stupp, Frechen, both of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Nov. 24, 1972, Ser. No. 309,463
Claims priority, application Germany, Nov. 26, 1971, 2158572
Int. Cl. G01j *3/30*
U.S. Cl. 356—85 **13 Claims**

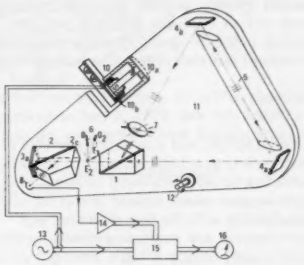


1. A method of characteristically distinguishing between fuel elements intended for use in a nuclear reactor, said fuel elements being held in a graphite covering, which includes the steps of: introducing into the graphite of said covering chemical substances which are only slightly diffusible and at most negligibly affect the neutron flow of the reactor, the spectral lines of said chemical substances being undisturbed by the carbon bands and capable of being excited by a laser pulse, said chemical substances being introduced into said graphite at such a concentration that the macroscopic neutron absorption cross section remains small; and irradiating said fuel elements intended for use in said reactor with laser pulses so as to form a plasma focus and locating the same in the optical beam path of a suitable spectrum analysis device.

3,841,758
ROTATION SENSITIVE RETARDER

John George Gievers, 245 Wimpole Dr., Rochester, Mich. 48063

Filed Sept. 28, 1972, Ser. No. 292,962
Int. Cl. G01b *9/02*; **G02f** *1/24*
U.S. Cl. 356—106 LR **27 Claims**



1. A rotation sensitive retarder system comprising
means for forming a beam of radiant energy,
a first polarizing beamsplitter for splitting said beam into two orthogonal linear polarized components comprising an ordinary ray and an extraordinary ray and for reunifying said components,
a plurality of means defining reflective surfaces positioned in a manner such as to provide an optical loop defining identical closed paths for said components of light in opposite directions,
said first beamsplitter being positioned in said paths,
means in said paths for changing the planes of polarization of the emerging othogonal components by 90° for reunification,
a second polarizing beamsplitter positioned exteriorly of said closed paths for transmitting substantially only that part of the reunified light which oscillates in the original plane of zero input rate and directing substantially only the light oscillating in the orthogonal plane due to an input rate externally of the path of the beam and the loop, the transmission axis of one of said beamsplitters being at 45° to the transmission axis of the other beamsplitter,
means in advance of the second beamsplitter for modulating the polarization form of the reunified light passing to the second beamsplitter.

3,841,759
VEHICLE HEADLAMP AIMING SYSTEM AND METHOD

Philip L. Turner, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

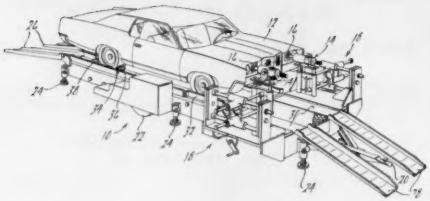
Filed Aug. 31, 1973, Ser. No. 393,699
Int. Cl. G01b *11/26*
U.S. Cl. 356—121 **11 Claims**

1. A system for determining the alignment of a motor vehicle headlamp comprising:
platform means defining at least one surface for receiving the load bearing wheels of a vehicle to be tested;
direction establishing means in cooperative association with said surface operative to align the driving wheels of the vehicle parallel to a first direction;

laterally displaceable means in cooperative association with said surface and spaced apart from said direction establishing means for receiving the nondriving wheels of the vehicle, movable perpendicularly to the first direction in response to alignment of the driving wheels parallel to the first direction whereby the vehicle chassis will be aligned with the direction of travel of the vehicle parallel to the first direction;

at least one movable arm means coupled to said platform;

at least one support means coupled to said arm means and defining a line having a selected angular relationship with



the first direction, said arm means movable to move said support means to a large number of potential positions representing possible headlamp locations while maintaining said support means defined line at the selected angular relationship with the first direction; and

electromechanical aim evaluating means mounted on said support means having an axis arranged at a predetermined angle with respect to the first direction, coupleable to a vehicle headlamp, and operable when so coupled to generate an electrical signal indicative of the headlamp alignment with respect to the first direction.

3,841,760

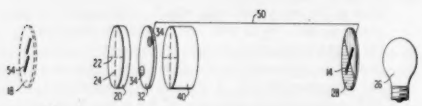
ZONAL FOCUS METHOD FOR DETERMINING THE AMOUNT OF ASTIGMATIC CORRECTION FOR AN OPTICAL SYSTEM

David L. Guyton, 5505 Huntington Pky., Bethesda, Md. 20014

Filed Feb. 27, 1973, Ser. No. 336,324

Int. Cl. G01b *9/00*

U.S. Cl. 356—124 **7 Claims**



1. A method for determining the amount of astigmatic correction necessary to be added by optical correcting means in conjunction with spherical correction to an optical system to cause the optical system to be optically corrected to be anastigmatic for a specified pair of points comprising the steps of:

locating the principal meridians of said optical system;

aligning the principal meridians of said optical correcting means with the principal meridians of said optical system;

correcting the dioptric power of one meridian of said optical system by said correcting means;

applying a principal-meridian-locating zonal focus test to the combination of said optical system and said correcting means, by applying said zonal focus test in a nonprincipal meridian thereby imaging the parts of a test image in a laterally displaced manner;

examining said test image;

maintaining the dioptric power correction of said one meridian constant and simultaneously varying in other meridians the power of said correcting means so as to remove the previously effected lateral displacement of parts of said test image; and

noting the astigmatic component of said correcting means whereby said astigmatic component represents the amount of astigmatic correction necessary for said optical system to be anastigmatic.

3,841,761

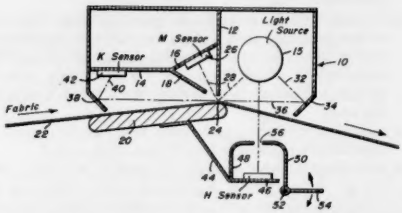
METHOD AND APPARATUS FOR DETECTING FAULTS IN FABRIC

Paul J. Selgin, Bethel, Conn., assignor to Neotec Corporation, Rockville, Md.

Filed Oct. 24, 1973, Ser. No. 409,241

Int. Cl. G01n *21/16, 21/30, 21/32*

U.S. Cl. 356—200 **10 Claims**



1. A method for detecting color and textural defects in a sheet of moving material comprising the following steps:

subjecting a preselected inspection area of the sheet to transmitted light incident to the sheet in a direction substantially perpendicular to the sheet;

detecting the light passing through the preselected area of the sheet which varies according to excessive thinness or thickness of the material in the area and producing a first corresponding detection signal;

subjecting the preselected area of the sheet to light at an acute angle of incidence for causing the reflection of light from the area;

detecting the reflected light which varies in response to color and textural faults in the area and producing a second corresponding detection signal;

subjecting the preselected area of the sheet to light impinging at a grazing angle;

detecting the grazing light which varies in response to textural obstructions present in the area and producing a third corresponding detection signal;

individually integrating the first, second and third signals; and

summing the first, second and third signals, simultaneously to produce an output signal corresponding to the color-tactile impact of one or more detected defects in the preselected area at a single time instant.

3,841,762

OPTICAL ARRANGEMENT FOR RECORDING A VARIABLE LIGHT ABSORBANCE IN OBJECTS ALSO HAVING A VARIABLE OPTICAL THICKNESS

Jarl Sune Pettersson, Goteborg, Sweden, assignor to Ingenjorsfirman Gradient, Birgit and Harry Rilbe, Goteborg, Sweden

Filed Apr. 25, 1973, Ser. No. 354,399

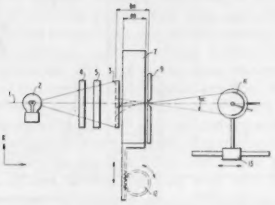
Claims priority, application Sweden, Apr. 26, 1972, 5469/72

Int. Cl. G01n *21/06*

U.S. Cl. 356—203 **15 Claims**

1. In an optical arrangement for measuring along a certain coordinate axis (x) the light absorbance at a certain wave

length (λ) of an object in which not only the absorbance, but also the optical thickness varies along said coordinate, comprising a light source, a holder for said object, means for monochromatizing the radiation from said light source, a light-sensitive device having a specific active area for receiving from said light source radiation that has passed through said object and said monochromatizing means, a slit which is narrow in the x direction and which limits the angular extension in said x direction of that radiation to subtend a first angle which hits the active area of the light-sensitive device, and



means for relative motion in the x direction between said object and said slit, the improvement which comprises means for varying the position of the light-sensitive device with respect to said slit for exposing the entire length of said active area in the x direction to said radiation during measurements of said object in the x direction the light source having a constant radiation intensity in the x direction over a length subtending a second angle from the slit which is always greater than a third angle subtended by the active area of the light-sensitive device from said slit, said third angle always being no greater than said first angle.

3,841,763

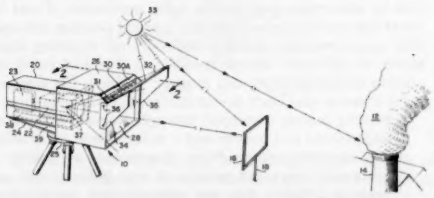
METHOD AND APPARATUS FOR MONITORING AND CORRELATING VISIBLE ENVIRONMENTAL CONTAMINATION

Robert E. Lewis, Palo Alto, Calif., assignor to Timelapse, Inc., Mountain View, Calif.

Filed June 25, 1973, Ser. No. 373,026

Int. Cl. G01n *21/12*

U.S. Cl. 356—207 **19 Claims**



1. Photographic photometry apparatus for pictorial recording of scene brightness comprising, in combination:

a photographic camera means adapted to photograph a scene simultaneously with photographing a light opacity reference means, and recording said photograph on a recording medium;

an enclosed light-shield box supported about the lens opening of the camera means, said box providing a substantially non-reflective interior enclosure and supporting a scene light filter assembly about the front of the lens opening and intersecting the field of view of the camera means, said scene light filter assembly including a neutral density light filter in line with the camera means optics and adapted to be aligned with a subject to be recorded;

a light reflection plate means positioned about the exterior of the light-shield box adjacent to said light filter assembly, the light reflection means being positioned with the surface of the light reflection means intersecting a portion of the field of view of the camera means and in facing alignment with an illuminance source to diffusely reflect illuminance rays from the source to within the enclosed light-shield box; and

a light opacity reference means of a plurality of neutral density mediums of varying degrees of light absorption, the light opacity reference means being positioned to intersect the field of view of the camera means and in alignment with the illuminance rays of the illuminance source reflected to the camera means optics through the enclosed light-shield box.

3,841,764

INTRASCOPE

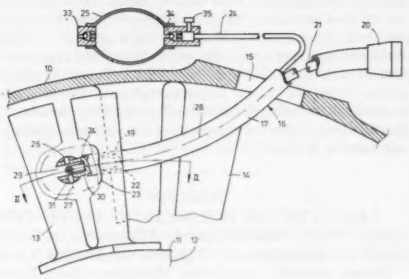
Leonard Stanley Snell, and William Edward Dennis Vivian, both of Alveston, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 92,123, Nov. 23, 1970, abandoned. This application July 5, 1972, Ser. No. 269,072

Claims priority, application Great Britain, Sept. 12, 1969, 59955/69

Int. Cl. G01n *21/16*

U.S. Cl. 356—241 **1 Claim**



1. The method of inspecting by use of an intrascope a machine comprising a rotor having a body supported for rotation and blades connected to said body; a casing surrounding the body and blades, said casing having an opening therein for access to said blades; said intrascope comprising a flexible elongate light guide, a viewing objective provided at one end of the light guide, and means for holding said one end of the light guide between said blades; said method comprising the steps of

inserting the intrascope through said opening,

holding said one end of the intrascope between said blades, and

turning said rotor about the rotational axis thereof thereby to feed the intrascope into the interior of the casing for inspection of said machine.

3,841,765

MICRODIFFUSION CELL

Jack L. Lambert, and Reginald R. Tschorn, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

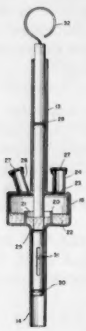
Filed May 17, 1973, Ser. No. 361,077

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **12 Claims**

1. An apparatus for fluid analysis comprising an outer casing and a plunger means within the casing, the casing having

upper and lower hollow tubular portions and a radially enlarged intermediate chamber portion between the tubular portions, the chamber portion providing a fluid-holding chamber and having means for introducing fluid into the chamber, the plunger means being reciprocable within the tubular portions of the outer casing, sealing means between the plunger means and each of the upper and lower tubular portions of the outer casing, the plunger means being provided with fluid-



holding means between the sealing means for holding a quantity of fluid and being reciprocable between a first position in which the fluid-holding means thereof is positioned within the fluid-holding chamber of the outer casing and a second position in which the fluid-holding means thereof is positioned within one of the tubular portions of the outer casing whereby fluid can be withdrawn from the fluid-holding chamber by the fluid-holding means of the plunger means for analysis in said one tubular portion.

3,841,766

LIGHT CURTAIN FOR ACCIDENT PREVENTION

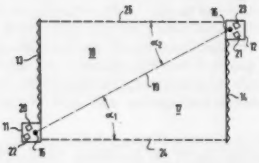
Arthur Walter, Hindenburgstrabe 32, Denzlingen, Germany

Filed June 27, 1973, Ser. No. 374,004

Claims priority, application Germany, July 25, 1972, 2236482

Int. Cl. G02f 1/34

U.S. Cl. 356—256 **10 Claims**



1. Light curtain apparatus for accident prevention comprising: a pair of scanners disposed opposite one another, each scanning a respective predetermined area around an axis located in the scanner with a beam of light and each being associated with a respective one of a pair of opposed reflectors such that each beam of light is reflected back on itself independently of the angle of incidence; each scanner having installed therein a photoelectric transducer which, in the absence of any obstacle in the path of the associated beam of light, receives the light returned by the reflector and converts it into an electrical signal, any interruption in the electrical signal serving as an indication of an obstacle present in the beam of light; the two scanning areas each being in the form of a right-angled triangle and said triangles being contiguous.

3,841,767

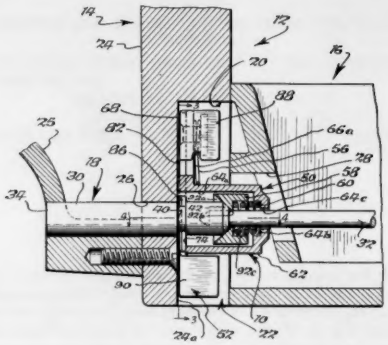
FOLLOWER ROD LATCHING DEVICE

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,187

Int. Cl. B42f 13/00, 17/16

U.S. Cl. 402—61 **8 Claims**



1. In a card file drawer having front and tray sections; a follower rod removably insertable rearwardly through an opening in said front section, an externally accessible cavity and into said tray section for stringing apertured cards within said tray section, said follower rod having an inner end portion of reduced cross section and an outer end portion of enlarged cross section, said follower rod end portions being joined by a rearwardly facing converging surface, and said outer end portion having a transversely extending groove and being slideably received within said front section opening to position said groove within said cavity when said follower rod is in a fully inserted position; and a latch device fixed within said drawer cavity and having a manually operable member for releasably retaining said follower rod latched in said inserted position by seating engagement within said outer end portion groove, said latch device additionally having a spring deformable by said converging surface upon movement of said follower rod rearwardly towards said inserted position and operable upon manually induced follower rod releasing movements of said latch device member to bias said outer end portion forwardly from said inserted position, the improvement wherein said latch device comprises in combination:

a housing having a stepped through opening with an enlarged front end portion and a reduced rear end portion, said rear end portion being dimensioned to loosely receive said inner end portion of said follower rod, said housing defining first and second stops spaced transversely of said housing opening;

means for attaching said housing within said cavity to position said housing opening in at least substantial alignment with said front section opening;

said latch device member is a manually operable latch lever mounted on said housing for pivotal movement transversely of said front end portion of said housing opening; biasing means for normally biasing said latch lever for pivotal movement into a first position determined by engagement of said latch lever with said first stop, said biasing means being resiliently deformable to permit pivotal movement of said latch lever towards and into a second position determined by engagement of said latch lever with said second stop, said latch lever being engageable by said converting surface when said follower rod is inserted thereby to force same to move from said first

position against said biasing means towards said second position, said biasing means serving to seat said latch lever within said groove when said follower rod is in said inserted position;

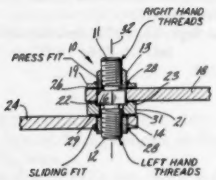
a spacer sleeve loosely fitted within said front end portion of said housing opening, said spring being a coil spring disposed intermediate said spacer sleeve and said rear end portion of said housing opening for resiliently opposing movements of said spacer sleeve theretowards, said coil spring being dimensioned to loosely receive said inner end portion of said follower rod, said spacer sleeve having a through opening including a portion dimensioned to slideably receive said inner end portion of said follower rod and a front end surface portion engageable by said follower rod converging surface for effecting compression of said coil spring upon movement of said follower rod towards said inserted position, characterized in that said loose fit of said spacer sleeve within said housing opening permits follower rod induced transverse and tilting movements of said spacer sleeve relative to said housing as required to accommodate for misalignments of said housing opening with said front section opening and in that said latch lever when in said first position blocks said front end portion of said housing opening sufficiently to prevent axially directed forward movement of said spacer sleeve outwardly therethrough.

3,841,768

UNIVERSAL LOCK DEVICE FOR RIGHT HAND OR LEFT HAND APPLICATIONS

Clarence Maurice Adams, Reed City, Mich., assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed June 7, 1973, Ser. No. 367,779
Int. Cl. F16c *11/10*
U.S. Cl. 403—3 **5 Claims**



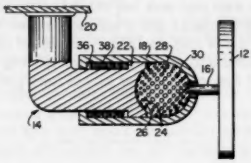
1. A binding or lock device for limiting relative motion of two members movable about a common axis comprising a pair of relatively movable arms, a double ended stud received by both arms defining the common axis, one end of said stud being formed with right hand threads and the opposite end being formed with left hand threads, a pair of cooperating retainer nuts each in threaded engagement with a mating end of said stud to retain said arms as an assembly, said stud being received in a first arm with a pressed fit, a first retainer nut in threaded engagement with its mating end and settable to a fixed position relative to said first arm effective to exert a tensile stress on said stud tending to withdraw said stud from the first arm, the second retainer nut being slidably received in and keyed to the second arm, said second arm being rotated relative to the first arm about said common axis in a predeter mined direction until said arms lock or bind temporarily precluding further rotation in said predetermined direction, said arms retaining relative mobility in a direction opposite to said predetermined direction effective to release said arms.

3,841,769

ANGULARLY ADJUSTABLE BRACKET

William R. Bowerman, 1824 Mississippi St., Lawrence, Kans. 66044

Filed Oct. 24, 1972, Ser. No. 299,929
Int. Cl. F16c *11/06*
U.S. Cl. 403—90 **6 Claims**



1. An angularly adjustable coupling, comprising

a. a relatively fixed first member,

b. a relatively movable second member, and

c. resilient means urging said members into releasable engagement with one another including a relatively movable sleeve telescoped over said first and second members and a coil spring mounted within said sleeve and engaging one of said members and said sleeve, said sleeve engaging the other of said members,

d. one of said members being formed with a convex portion and the other being formed with a cooperating seat portion releasably engageable with said convex portion,

e. one of said seat portion and said convex portion being formed with at least a plurality of protuberances and the other being formed with spaced indents to releasably receive said protuberances,

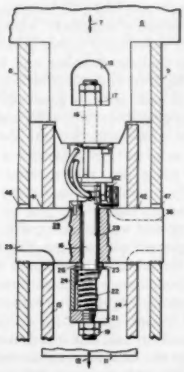
f. said members being free for temporary separation by pulling said members apart against the force of said resilient means whereby the angular relation of said member may be altered.

3,841,770

LOCK BAR MECHANISM

Willard D. Childs, Olivenhain, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Aug. 13, 1973, Ser. No. 388,108
Int. Cl. E21b *19/00*
U.S. Cl. 403—106 **7 Claims**



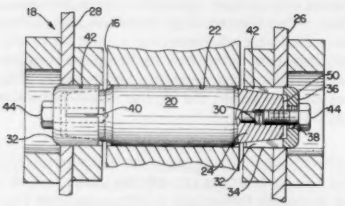
1. A lock bar mechanism for use with a drilling mechanism comprising a main frame, a pair of main side plates on and depending from said main frame in parallel relationship with each other, a hook frame, a pair of hook side plates on and

extending upwardly from said hook frame in parallel relationship with said main side plates, means defining a pair of transversely aligned openings in said main side plates, means defining a pair of transversely aligned apertures in said hook side plates adapted to be moved into and out of transverse alignment with said openings in said main side plates, a support rod mounted on said main frame and extending parallel to and between said hook side plates, a transversely extending lock bar journalled on said support rod and rotatable between a first position with said lock bar extending through said openings and said apertures and a second position with said lock bar at least, out of said openings, and means interconnecting said main frame and said lock bar for rotating said lock bar between said first position and said second position.

3,841,771
TAPERED HINGE PIN ASSEMBLY AND REMOVAL MEANS

Robert F. Shankwitz, Oswego, and Anthony L. Garman, Stevensville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 26, 1972, Ser. No. 318,516
Int. Cl. B23p *19/04*
U.S. Cl. 403—163 **6 Claims**

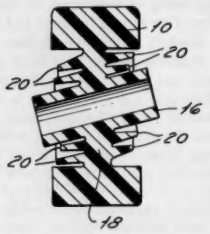


1. In a hinge structure comprising a bifurcated member defining a pair of arms, an intermediate member located between said arms of the bifurcated member, means defining a bore through each arm and said intermediate member, said bores being in concentric alignment, a hinge pin in said bores having a generally cylindrical center portion fitted within the bore in said intermediate member and having tapered end portions, which tapered end portions are within and spaced from the bores of said arms, a generally cup-shaped collar defining generally cylindrical sidewalls and an end wall fitted within each of the arm bores, the interior wall of the collars being tapered so as to be in engagement with the tapered end portions of said hinge pin, said tapered walls containing a plurality of axially entending slots, axially disposed threaded bores in each end of said hinge pin, an end wall opening formed through the end wall of each collar, said opening being in concentric alignment with a respective hinge pin bore, said axially disposed threaded bores adapted to receive first bolt means passing through each end wall bore in spaced relation thereto and threadedly engaged in a respective hinge pin bore and having head means thereon for contacting a respective collar end wall whereby said collar is drawn toward said hinge pin so as to wedge the end portions thereof in respective arm bores when the first bolt means is tightened, and further including threads formed within each collar end wall opening so as to permit a second bolt means to be engaged therewith subsequent to removal of said first bolt means thereby facilitating removal of said collar.

3,841,772
JOINT CONSTRUCTION

Edward A. Snidar, Palm Harbor, Fla., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 25, 1973, Ser. No. 364,013
Int. Cl. F16b *9/00*
U.S. Cl. 403—224 **7 Claims**

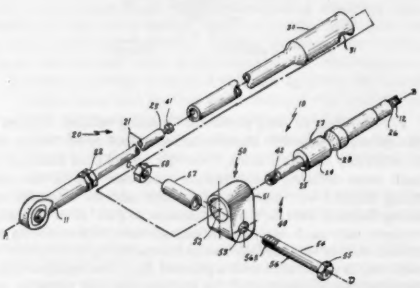


1. A joint to serve in the capacity of a vehicle ball joint comprising; an annular outer supporting member, an inner supporting member received generally concentrically within said outer supporting member with a generally annular space therebetween, an annular web interconnecting said members and extending through the annular space therebetween, said web having flexible characteristics allowing cocking of said members relative to each other while providing resistance to said cocking in any direction, said annular web having an axial dimension relatively smaller than the axial dimension of said members, and annular flanges spaced radially from each other and extending axially from said annular web to provide an interference action which resists further cocking from a predetermined degree of generally axial cocking between said members.

3,841,773
RELEASABLE CONNECTOR SUBASSEMBLY

Don L. Young, Jr., Florissant, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,818
Int. Cl. F16c *19/00*
U.S. Cl. 403—341 **1 Claim**



1. A releasable connector subassembly, adapted for use in easily and rapidly disconnecting a load-transmitting control assembly in a high density vehicle, wherein said control assembly includes an end fitting having a control rod portion which, in turn, includes a first control rod section having a first end and a second end, and an aligned second control rod section having a first end and a second end and also having an external

surface with a peripheral groove therein, with said second end of the first control rod section and said first end of the second rod control section to be releasably engaged, comprising:

a. means for releasably engaging said second end of said first control rod section with said first end of said second rod control section, and with said second end of said first control rod section releasably engaged with said first end of said second control rod section, whereby a joint is formed;

b. a sleeve member, essentially in the form of a tube with a suitably located notch therein and therethrough, with said sleeve member slideably movable on, and removably fitted on and over, and peripherally surrounding and abutting the joint formed by the releasably engaged said first control rod section and said second control rod section, whereby when said sleeve member is in such a peripherally surrounding and abutting position, said engaged first and second control rod sections cannot be disengaged from each other;

c. and, means for releasably securing said sleeve member to said joint, wherein said means includes:

1. a collar with longitudinal passageway therethrough, slideably movable on, and removably fitted on and over, and peripherally surrounding and abutting said sleeve and indirectly surrounding said joint, and with said collar also having a transverse passageway therethrough;

2. a bolt having a head and a shank portion with a far end which is threaded, and with said shank portion passing into, through, and out of the transverse passageway in said collar, with said threaded far end of said shank protruding from said transverse passageway of said collar;

3. a spacer, in the form of a right circular cylinder, removably fitted over and abutting with said shank portion of said bolt, and with said spacer interposed between said shank portion and said transverse passageway of said collar;

4. and, a nut threadedly and removably engaged with said threaded far end of the shank portion of said bolt;

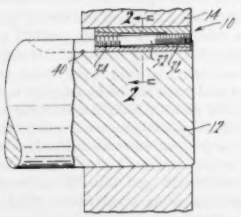
whereby said spacer abuts said sleeve member at the notch thereof, and also abuts the external surface of the said second control rod section at the peripheral groove therein, thereby releasably securing said sleeve member to said joint and concurrently permitting said second control rod section to rotate within said sleeve.

3,841,774

EXPANDABLE SHAFT KEY

Joel W. Maxey, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,420
Int. Cl. F16d *1/06*
U.S. Cl. 403—358 **6 Claims**



1. An expandable key assembly constructed to interconnect first and second members having aligned keyways,

said expandable key assembly having a generally rectangular cross section,

said key assembly comprising a first key part, a second key part and an intermediate member interconnecting said parts,

said first and second key parts each being of elongated construction nd having a sloping surface,

said sloping surface of said first key part being in slidable engagement with said sloping surface of said second key part,

said first and second key parts each having an enlarged end with a threaded axial bore,

said intermediate member having a first threaded portion threadedly engaging the bore of said first key part and a second threaded portion threadedly engaging the bore of said second key part,

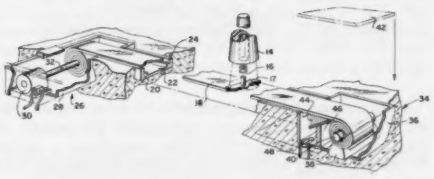
said intermediate member being constructed to be rotated and to produce axial and of said first key part relative to said second key part and concomitant transverse radial displacement of said first key part relative to said second key part.

3,841,775

MOVABLE TRAFFIC LANE DIVIDER

Robert Lee Pare, Turks Missippi Bldg., Providence, R.I. 02903

Filed Mar. 30, 1973, Ser. No. 346,254
Int. Cl. E01f *9/00*
U.S. Cl. 404—11 **16 Claims**



1. An automated traffic lane divider ensemble including:

a. a plural lane highway,

b. a plurality of traffic lane markers longitudinally spaced along said highway,

c. means for moving said markers back and forth, transversely across a portion of the width of said highway,

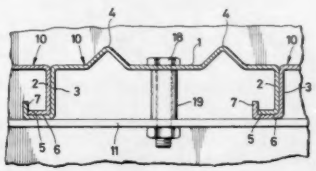
d. said means also partially supporting said markers and extending between said lanes.

3,841,776

TRAFFICABLE SURFACE FOR MECHANICAL PARKING APPARATUS, RAMPS LIFTING PLATFORMS OR THE LIKE

Kaspar Klaus, Schlachthofstrasse 46, Memmingen, Germany

Filed Feb. 5, 1973, Ser. No. 329,350
Claims priority, application Germany, Feb. 5, 1972, 2205479; June 10, 1972, 2228366; July 22, 1972, 2236057
Int. Cl. E01c *5/16*
U.S. Cl. 404—41 **7 Claims**



1. A trafficable surface to carry a road vehicle comprising an assembly of substantially similar carriers having substan-

tially similar profile, in which each carrier is of sheet metal and of substantially U-shape, each carrier having a back wall incorporating at least one upwardly projecting rib which extends the height of the carrier and increases the rigidity of the carrier; downwardly-directed side walls integral with the back wall; and edge strips at the lower edges of the side walls, which edge strips are bent in similar directions, the outwardly directed edge strips of the respective carriers being of channel form and embracing the inwardly-directed edge strips of the adjacent carriers.

3,841,777

PAVING VIBRATORY FINISHING MACHINE HAVING A DEVICE FOR CONSTANT COMPACTION OF THE DEPOSITED LAYER

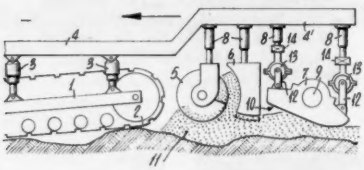
Domenico Domenighetti, via Nosetto 6, Bellinzona, Switzerland

Filed May 3, 1972, Ser. No. 250,063

Claims priority, application Switzerland, May 5, 1971, 6673/71

Int. Cl. E01c *19/00*

U.S. Cl. 404—84 **4 Claims**



1. An automatic finishing machine for depositing on a substrate a layer having a smooth surface and substantially uniform density throughout the layer, comprising a vehicle, means operatively related to the vehicle for applying a said layer of material to said substrate, said applying means comprising distributing means for said material and strike-off means for levelling the distributed material, means operatively related to the vehicle for applying compacting force to said layer to smooth said layer, and means operatively related to the vehicle and to said compacting means responsive to variations in the pressure between said layer and said compacting means to vary the quantity of material deposited on said substrate inversely as said pressure.

3,841,778

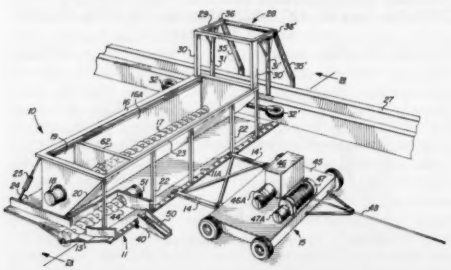
APRON LAYING DEVICE FOR LIVESTOCK FEEDING TROUGHS

Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034

Filed Oct. 15, 1973, Ser. No. 406,255

Int. Cl. E01c *19/12*

U.S. Cl. 404—105 **14 Claims**



1. A concrete slab lying machine comprising a combination:

a frame,

at least one pair of wheels journaled on one end of said frame for positioning said frame relative to a fixed object along which said slab is to be laid for aiding in moving said frame along said object,

a skid mounted on said frame for supporting said frame as it moves across the surface of the ground,

a hopper mounted on said frame for receiving aggregate and for discharging said aggregate out of an opening laterally across the surface of the ground being traversed by the machine,

a deck plate forming a part of said frame arranged longitudinally of the bottom surface of said skid and in front of said hopper in the direction of movement of the machine, and means mounted on said deck plate for penetrating below said skid for forming a trench below the surface of the ground as the machine is moved for forming a footing integral with the apron being laid by the machine.

3,841,779

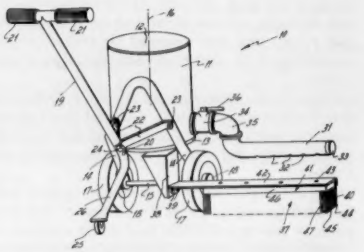
LIQUID BLACKTOP SEALER MACHINE

Thelma L. Ray, 4915 Marion Ave., Norwood, Ohio 45212

Filed Oct. 2, 1972, Ser. No. 294,471

Int. Cl. E01c *19/16*

U.S. Cl. 404—111 **1 Claim**



1. A machine for spreading liquid blacktop sealer on a blacktop surface comprising

a supply tank for the blacktop sealer mounted on a wheeled suspension system that allows said tank to be rolled over the blacktop surface to be coated, said wheeled suspension system including two main wheels for said supply tank, and a swivel wheel located rearwardly of said two main wheels in a plane substantially perpendicular to the rotational axis of said main wheels, said plane lying on the centerline of said supply tank,

a handle connected with the supply tank and wheeled suspension system for manually moving the spreader as desired on the blacktop surface to be coated,

a discharge manifold extending outwardly at substantially right angles relative to a walking path of the machine's user, said manifold being disposed beneath said supply tank and connected to said supply tank at the bottom thereof, and said manifold being adapted to discharge the blacktop sealer directly onto the blacktop surface,

a flexible docter blade and a brush aligned parallel with the manifold, and positioned rearwardly thereof and fixedly connected to said suspension system, for smoothing the blacktop sealer discharged onto the blacktop surface in a relatively even coating, said docter blade being positioned immediately in front of said brush so that said brush prevents undo rearward flexure of same as said machine is pushed along the blacktop surface, and

a hand valve directly connected to said discharge manifold, the flow of blacktop sealer through said discharge manifold being manually regulated by use of said hand valve.

3,841,780

PROCESS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

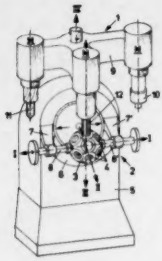
Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

Division of Ser. No. 222,111, Jan. 31, 1972. This application Feb. 6, 1974, Ser. No. 440,181

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *35/00*

U.S. Cl. 408—1 3 Claims



1. A process for the production of connectors for space frameworks or the like, particularly polyhedral connectors, wherein a connector blank is held in a clamping device and provided with a plurality of tapped holes, the axes of which intersect in the center of the connector, characterized by the following process steps:

a. forming a through hole, preferably a tapped hole, extending at least through the approximate center of the connector blank;

b. truncating or countersinking the connector blank at the bore openings at right angles to the axis (I) of the said through hole to accurately limit the length of the latter;

c. clamping the connector blank by means of the through hole and along the through hole axis (I) in a clamping device which is rotatable about two axes (I and II) in such a manner that the two axes (I and II) intersect with a further axis (III) of a tool, in the center of the connector blank, under a variable angular ratio;

d. adjusting the connector blank to various predetermined fixed spatial positions by rotation about the two axes (I and II);

e. machining the blank in the fixed spatial positions along the further axis (III) of a tool;

f. effecting a relative motion between the clamping device and the tools about a fourth axis (IV) common to the tools and the clamping device; and

g. machining the connector blank by means of various tools along the further axis (III), after effecting a predetermined relative motion, while maintaining the original clamping of the blank in the axis (I) of the through hole.

3,841,781

APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

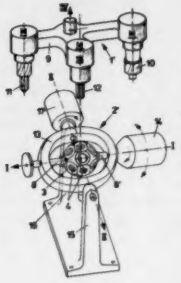
Division of Ser. No. 222,111, Jan. 31, 1972. This application Feb. 6, 1974, Ser. No. 440,184

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *39/20*

U.S. Cl. 408—35 4 Claims

1. Apparatus for producing accurately spaced holes in spherical and polyhedral connector blanks having a through bore, comprising support means, a ring rotatably mounted on said support means for rotation about an axis (II), clamping means adapted to engage such connector blank at each end of the through bore along the longitudinal axis (I) thereof, said clamping means being rotatably supported on said ring and rotatable about the axis (I), a tool having a further axis (III) of rotation disposed perpendicular to the first-mentioned axis



of rotation (II) of said ring, the two axes of rotation (I and II) of said ring and clamping means being disposed to intersect in a point with said further axis (III) of said tool, whereby the connector blank may be oriented in space about its center to thereby permit machining of the connector blank over substantially its entire peripheral area without requiring rechucking thereof.

3,841,782

APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

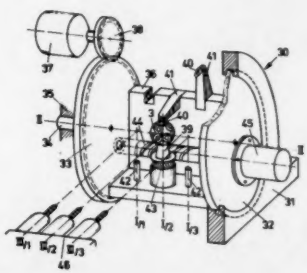
Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

Division of Ser. No. 222,111, Jan. 31, 1972. This application Feb. 6, 1974, Ser. No. 440,186

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *39/20*

U.S. Cl. 408—50 8 Claims



1. Apparatus for forming and producing accurately spaced holes in spherical and polyhedral connector blanks comprising, support means, a plurality of clamping means disposed laterally in spaced relationship on said support means, each of said clamping means adapted to engage a respective connector blank and having an axis (I) about which said clamping means and its respective clamped blank are rotatable relative to said support means, means connected to said support means for rotating said support means about a further axis (II), the axes (I) of the clamping means being disposed per-

pendicular to the axis of rotation (II) of said support means, drive means for rotating said clamping means about the axes of rotation (I), machining means positioned adjacent said support means, said machining means including a plurality of tools disposed laterally in spaced relationship corresponding to the spacing of said clamping means, and each of said tools having a rotational axes (III) intersecting the axis (I) of the corresponding clamping means and axis of rotation (II) of the support means at one point, whereby the connector blanks may be oriented in space about their respective centers to thereby permit machining of each connector blank over its entire peripheral area without requiring rechucking thereof.

3,841,783

APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

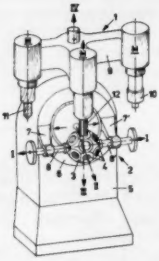
Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

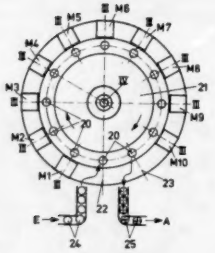
Division of Ser. No. 222,111, Jan. 31, 1972. This application Feb. 6, 1974, Ser. No. 440,183

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *39/20*

U.S. Cl. 408—50 4 Claims





1. Apparatus for producing accurately spaced holes in spherical and polyhedral connector blanks, comprising a bearing block, a head having a base plate rotatably mounted on said bearing block for rotation about an axis (II), a pair of arms diametrically connected to said base plate and projecting substantially vertically therefrom, clamping means adapted to engage a connector blank rotatably supported in said pair of arms and rotatable about the axis (I), a tool having a further axis (III) of rotation disposed perpendicular to the first-mentioned axis of rotation (II) of said base plate, the two axes of rotation (I and II) of said base plate and clamping means being disposed to intersect in a point with said further axis (III) of said tool, whereby the connector blank may be oriented in space about its center to thereby permit machining of the connector blank over substantially its entire peripheral area without requiring rechucking thereof; said bearing block being disposed on a table means, said table means having an axis of rotation (IV), said tool being one of a plurality of tools fixed in spaced relationship along a circular path adjacent the periphery of said table means, said bearing block and associated clamping means rotatably movable past said plurality of tools on rotation of said table means, and the axis of rotation (IV) of said table means being congruent with the center of said circular path.

3,841,784

APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

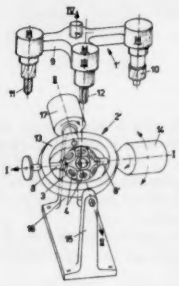
Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

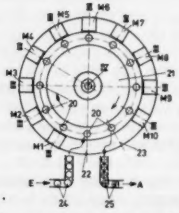
Division of Ser. No. 222,111, Jan. 31, 1972. This application Feb. 6, 1974, Ser. No. 440,187

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *39/20*

U.S. Cl. 408—50 4 Claims





1. Apparatus for producing accurately spaced holes in spherical and polyhedral connector blanks comprising, support means, a ring rotatably mounted on said support means for rotation about an axis (II), clamping means adapted to engage such connector along the longitudinal axis (I) thereof, said clamping means being rotatably supported on said ring and rotatable about the axis (I), a tool having a further axis (III) of rotation disposed perpendicular to the first-mentioned axis of rotation (II) of said ring, the two axes of rotation (I and II) of said ring and clamping means being disposed to intersect in a point with said further axis (III) of said tool, whereby the connector blank may be oriented in space about its center to thereby permit machining of the connector blank over substantially its entire peripheral area without requiring rechucking thereof; said support means and associated clamping means being disposed on a table means, said table means having an axis of rotation (IV), said tool being one of a plurality of tools fixed in spaced relation along a circular path adjacent the periphery of said table means, said support means and associated clamping means rotatably movable past said plurality of tools on rotation of said table means, and the axis of rotation (IV) of said table means being congruent with the center of said circular path.

3,841,785
BORING BAR

Karl G. Werther, 1409 Hinnen Ave., Hacienda Heights, Calif. 93307

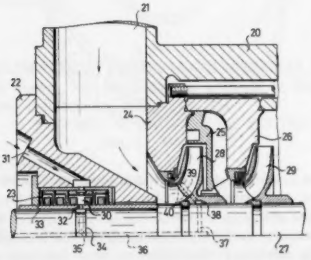
Filed June 9, 1972, Ser. No. 261,526
Int. Cl. B23b 29/14
U.S. Cl. 408—197 6 Claims

1. A boring bar for mounting in a boring machine and adapted to carry a boring bit comprising a cylindrical body member having a forwardly axially extending portion, said forwardly axially extending portion having a longitudinal axis, a continuous end portion and a transeverse channel extending therethrough, said channel being positioned adjacent to and enclosed by the continuous end portion of said forwardly extendingly portion and being adapted to hold said boring bit therein, a slot parallel to and passing through the longitudinal axis of said forwardly extending portion and extending from the upper portion thereof proximate said cylindrical body member to said channel and merging therewith and means for compressing said forwardly extending portion about said slot thereby maintaining said bit within said channel, said means being positioned rearwardly of said channel along said forwardly extending portion.

3,841,786
METHOD AND COOLING SYSTEM FOR COOLING CENTRIFUGAL PUMPS

Dusan Florjancic, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 28, 1971, Ser. No. 157,438
Claims priority, application Switzerland, July 1, 1970, 9960/70
Int. Cl. F04d 7/00, 7/06, 9/00
U.S. Cl. 415—114 3 Claims



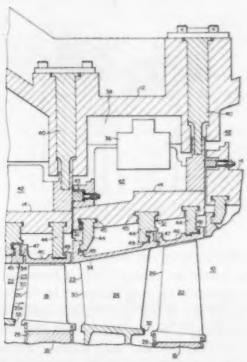
1. A centrifugal pump for the conveyance of hot fluids wherein the formation of vapor bubbles in the hot fluids is avoided, said pump comprising

a casing for flow of a fluid therethrough;
a suction branch adjoining said casing;
an internal casing part defining a central inlet;
a drive shaft journalled in said casing and within said casing part on a longitudinal axis;
at least one radial flow impeller mounted on said drive shaft, said impeller having at least one blade extending radially of said shaft and transversely of the fluid flow, said blade having a forward flow impinging edge and surfaces within a pump zone adjacent said blade in which vapor bubbles formation can raise, said edge extending at an angle to said axis of rotation; and
a cooling system for cooling said zone, said system including at least one bore extending through said blade, a plurality of discharge ducts disposed in said blade in communication with said bore and extending to the surface of said forward flow impinging edge, and means for supplying coolant to said bore and said ducts to discharge the coolant out of said blade over said blade surface in a fluid film into said zone.

3,841,787
AXIAL FLOW TURBINE STRUCTURE

Augustine J. Scalzo, Philadelphia, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1973, Ser. No. 394,599
Int. Cl. F01d 25/26, 5/08
U.S. Cl. 415—136 4 Claims



1. An axial flow turbine comprising:
an outer generally cylindrical casing,
a generally coaxial inner casing, said outer and said inner casings generally defining a plenum chamber therebetween,
an annular array of stationary blades disposed within said inner casing having an outer shroud portion,
a rotor having an array of rotatable blades on its periphery, said rotatable blades being coaxial and adjacent said stationary blades,
an array of arcuate blade ring segments disposed radially outwardly of said rotatable blades,
said array of stationary blades comprising arcuate integral vane segments thereof,
said stationary blades being supported from said inner casing by arcuate support segments, said arcuate support segments and said inner casing having a track and channel interlock arrangement therebetween, said arcuate support segments and said outer shroud portion of said stationary integral vane segments having a track and channel interlock arrangement therebetween, each arcuate support segment being fixedly attached at one point on its periphery to the inner casing to permit circumferential thermal expansion of said segments,

said array of arcuate blade ring segments being supported radially outwardly of said rotatable blades by arcuate support segments having track and channel interlock arrangements with the inner casing and also having a track and channel interlocking support arrangement between an edge of each of said ring segments and the downstream edge of adjacent upstream stationary integral vane segments,

said inner casing being supported within said outer casing by generally horizontal keying members, said keying members being received in keyways within said outer casing,

and at least two generally vertically disposed pins disposed between each inner casing member and said outer casing providing vertical alignment of said inner casing member with respect to said turbine.

3,841,788

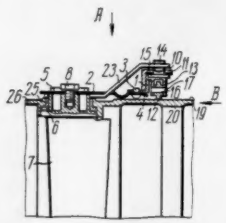
DEVICE FOR TURNING THE STATOR VANES OF TURBO-MACHINES

Jury Evgenievich Sljusarev, Zaporozhie, ulitsa 8 marta 66, kv. 23; Boris Grigorievich Reznik, Zaporozhie, prospekt Lenina, 23, kv. 52, and Jury Aronovich Galperin, Zaporozhie, ulitsa Voronikhina, 2, kv. 27, all of Zaporozhie, U.S.S.R.

Filed Nov. 9, 1972, Ser. No. 305,184

Int. Cl. F01d *17/14*

U.S. Cl. 415—147 **4 Claims**



1. A device for turning the stator vanes of a guiding apparatus for a turbo-machine, comprising: a housing for said turbo-machine; a synchronizing ring adapted to be turned about the axis of said turbo-machine and simultaneously move along said axis; a plurality of levers, each said lever being pivotably connected at one end thereof with said synchronizing ring and at the other end thereof being rigidly connected with the vanes of said guiding apparatus; means mounted on said synchronizing ring for limiting the displacement of the latter in a plane extending normal to the axis of said turbo-machine, said means being formed of a plurality of rollers; kinematic links being each connected at one end thereof with respectively each of said rollers and at the other end thereof being each connected to said ring, said links including pivotable means allowing said roller to turn in response to interaction thereof with said housing about an axis directed along the radius of said ring and passing approximately through the axis of said roller, and a carrier for turning said roller being adapted to cooperate with said roller.

3,841,789

VARIABLE DIFFUSER

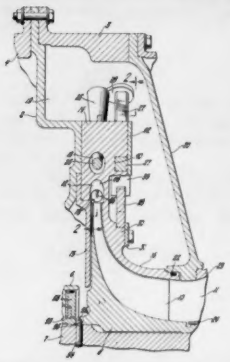
Leo A. Corrigan, and Esten W. Spears, Jr., both of Indianapolis, Ind., assignors to General Motors Corportion, Detroit, Mich.

Filed Sept. 17, 1973, Ser. No. 397,764

Int. Cl. F04d *29/46*

U.S. Cl. 415—148 **4 Claims**

1. A centrifugal machine comprising a rotor adapted to impel a fluid and a stator adapted to receive and diffuse the fluid impelled by the rotor; the stator comprising a body defining an annular array of diffusing passages extending generally tangentially outward from adjacent the periphery of the rotor; the machine being characterized by means for concurrently varying the relation of cross-sectional area to distance from the entrance to the passage throughout a substantial portion



of the length of each diffusing passage comprising, in combination, a tapering centerbody extending axially of each passage; a reciprocably mounted plunger fixed to and supporting each centerbody; guide means on the body guiding each plunger for reciprocating movement; and actuating means on the body coupled to the centerbodies for concurrent movement of the centerbodies.

3,841,790

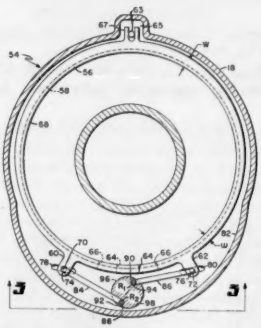
COMPRESSOR FLOW FENCE

Wolfgang J. Stein, Milford, and Salvatore Straniti, Orange, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 19, 1973, Ser. No. 417,101

Int. Cl. F02d *9/14, 7/04;* **F01d** *17/14*

U.S. Cl. 415—159 **16 Claims**



1. A flow control system for the annular inlet housing of a compressor, said system comprising:

at least one split ring received in a circumferential recess in said housing, said ring having adjacent free ends and a circular reference diameter;

means connected between said housing and actuation points adjacent each of the free ends of said ring for displacing said free ends toward and away from one another through a predetermined path thereby varying the reference diameter of said ring; and

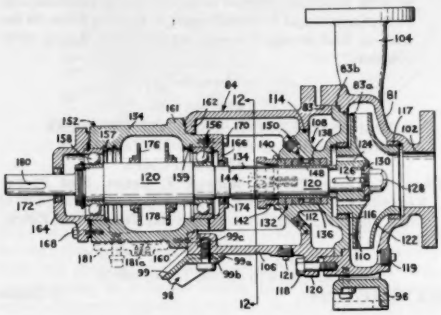
guide means connected between said housing and said ring at a point midway between the actuation points on said rings, said guide means preventing circumferential movement and permitting radial movement whereby the reference diameter of said ring is maintained substantially concentric relative to said inlet housing irrespective of the variation in said reference diameter.

3,841,791

ADAPTOR AND FRAME FOR A CENTRIFUGAL PUMP

John H. Doolin, New Providence, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed May 30. 1972, Ser. No. 257,583
Int. Cl. F04d *29/04, 29/42*
U.S. Cl. 415—170 A **6 Claims**



1. A two piece adaptor in combination with a frame including a bearing cartridge for the driven shaft of a separately coupled centrifugal pump having, a pump casing with an impeller therein connected to and rotatable with the driven shaft, said two piece adaptor includes:

a. an end cover and seal assembly about the driven shaft,

b. a connecting bracket independent of said end cover and seal assembly and said frame dispose about the shaft and spaced therefrom having a first connecting means at one end for connecting the adaptor to the back end of the casing, and at the end remote therefrom a second connecting means for connecting the connecting bracket to the frame,

c. means forming a seal between said connecting means and said end cover and seal assembly, and

d. the frame includes, support means for said connecting bracket at the end remote from the connecting means to support one end of said bearing cartridge in assembled position.

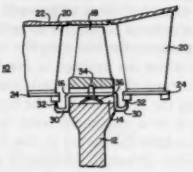
3,841,792

TURBOMACHINE BLADE LOCK AND SEAL DEVICE

David J. Amos, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1973, Ser. No. 339,700
Int. Cl. F01d *5/20*
U.S. Cl. 415—172 **6 Claims**

1. A turbomachine assembly having at least one rotatable disc member having a plurality of generally axially disposed grooves therein, a plurality of radial blades having root portions engaged on said grooves, an annular array of stationary radially directed vanes on each side of said disc, each of said stationary arrays of vanes including a shroud joining the radially inner ends of the vanes, and a locking and sealing member associated with each of said radial blades, each locking and sealing member being disposed longitudinally within one of said generally axially disposed grooves between said groove and said blade root, and engaging the blade root disposed therein by a pin member biasedly registered therebetween to lock the blade in its axial position with respect to said locking



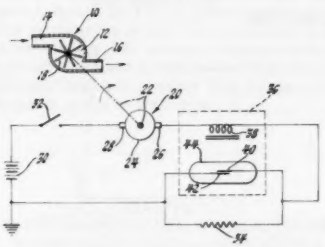
and sealing member, and each locking and sealing member having portions extending on each side of the disc adapted to secure said locking and sealing member axially in said groove and to form a seal with the adjacent shroud.

3,841,793

MOTOR-PUMP SYSTEM FOR PREVENTING A VAPOR LOCK

Daniel C. MacManus, Owosso, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1973, Ser. No. 399,994
Int. Cl. F04b *49/00*
U.S. Cl. 417—45 **2 Claims**



1. In combination: a pump including a pump chamber having an inlet and an outlet and a pump impeller rotatably mounted within the chamber for drawing liquid into the chamber through the inlet and for pumping liquid out of the chamber through the outlet when the impeller is rotatably driven such that the load on the impeller is directly related to the density of the liquid which is substantially constant at a maximum level in response to the absence of vapor bubble formation and which decreases in response to the onset of vapor bubble formation thereby decreasing the load on the impeller; a motor including an armature shaft and an armature winding for rotatably driving the armature shaft such that the current through the armature winding is directly related to the load on the armature shaft and such that the speed of the armature shaft is directly related to the voltage across the armature winding and is inversely related to the load on the armature shaft, the armature shaft of the motor coupled with the impeller of the pump for rotatably driving the impeller such that when the load on the impeller is substantially constant at a maximum level in response to the absence of vapor bubble formation in the liquid the load on the armature shaft is likewise at a maximum level to maintain the current through the armature winding at a maximum level and to maintain the speed of the armature shaft at a minimum level and so that when the load on the impeller decreases in response to the onset of vapor bubble formation in the liquid the load on the armature shaft likewise decreases to decrease the current through the armature winding and to increase the speed of the

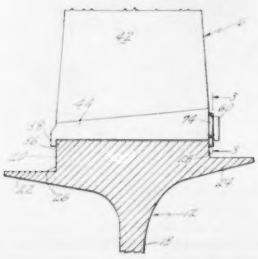
armature shaft which in turn increases the speed of the impeller thereby initiating a regenerative speed increase/load decrease reaction on the impeller which if left to continue would lead to the development of a vapor lock condition about the inlet of the pump chamber so as to prevent the entry of fuel into the chamber; a resistor connected in series with the armature winding of the motor for reducing the voltage across the armature winding when the resistor is not bypassed; means responsive to the current through the armature winding of the motor for bypassing the resistor when the current through the armature winding is at a maximum level in response to the absence of vapor bubble formation in the liquid to maintain the voltage across the armature winding at a maximum level and for not bypassing the resistor when the current through the armature winding decreases due to the onset of vapor bubble formation in the liquid to increase the speed of the armature shaft which in turn decreases the speed of the impeller thereby terminating the regenerative speed increase/load decrease reaction on the impeller to prevent the development of a vapor lock condition about the inlet of the pump chamber so as to permit the entry of fuel into the chamber to increase the load on the impeller back to the maximum level.

3,841,794

SNAP-ON LOCK FOR TURBOMACHINERY BLADES

Richard J. Bergmann, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 6, 1974, Ser. No. 448,796
Int. Cl. F01d *5/32*
U.S. Cl. 416—221 **11 Claims**



1. A turbomachinery rotor including in combination:

A. a support disc member concentric about an axis and having:

1. a rim portion extending circumferentially around the outer periphery of said disc member and having substantially radial surfaces at the axial ends thereof,
2. a plurality of substantially axially extending and circumferentially spaced disc slots in said disc rim portion and extending for the full axial dimension of the rimmed portion and opening into said radial surfaces and being of selected cross-sectional shape to be greater in circumferential dimension at a station nearer the axis than at a station farther from the axis,

B. a plurality of blade members each received in one of said disc slots and having:

1. a root section of substantially the same axial dimension as said disc rim portion so that the axial ends of each blade root section so positioned in its disc slot will substantially align with the rim portion radial surfaces and being of selected cross-sectional shape so as to be matingly received in said disc slot to prevent radial movement of the blade relative to the disc member and having circumferentially spaced side surfaces when so positioned in its disc slot,

C. stop means operative to prevent said blade member from moving in a first axial direction within said disc slot,

D. a retaining slot defining member located at an axial end of the blade root section and shaped to define a substantially circumferentially extending retaining slot opening toward the axis and being of selected axial dimension and having a first wall thereof extending substantially radially and in alignment with the rim portion radial surface at that radial end of the disc rim portion and having a second wall in selected axial spaced relation to the first wall to define the retaining slot axial dimension therebetween, and further being shaped to define circumferential projections radially outward of the slot,

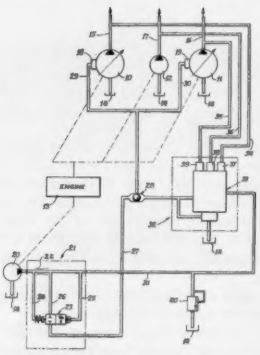
E. a snap-on lock member shaped to snap over said circumferential projections and to be wedged into said retaining slot and to abuttingly engage the disc radial surface so as to prevent movement of the blade within the disc slot in an axial direction opposite to said first axial direction and so that centrifugal force will apply a retaining force on the snap-on lock member in said retaining slot during rotor rotation.

3,841,795

COMBINED ENGINE SPEED AND PRESSURE RESPONSIVE CONTROL FOR VARIABLE DISPLACEMENT PUMPS

Glenn E. Ferre, Peoria; Maurice F. Franz, East Peoria; Kenneth R. Lohbauer, and William D. McMillan, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 17, 1972, Ser. No. 272,408
Int. Cl. F04b *23/08, 17/00, 49/08*
U.S. Cl. 417—216 **8 Claims**



1. A hydraulic power system for an excavator or the like, said system comprising:

a plurality of variable displacement hydraulic pumps for supplying power fluid for said system;

prime mover means operatively connected to drive said pumps;

means including a fixed displacement pump for providing a source of pilot control fluid and underspeed valve means responsive to the output of said fixed displacement pump to generate a control signal that is a function of the speed of said prime mover;

servo-control means responsive to said pilot control fluid to adjust the displacement of said variable displacement pumps as a function thereof; and,

pressure responsive summing valve means responsive to the sum of the pressure of said power fluid from said plurality of pumps to override said pilot control signal under overload conditions, said underspeed valve means and said summing means being communicated by fluid communication means with said servo-control means.

3,841,796

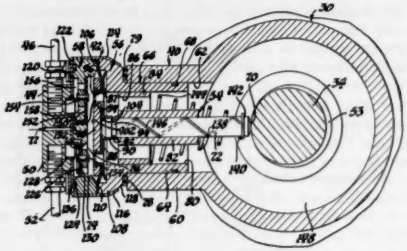
DIFFERENTIAL MOUNTED SINGLE STAGE DIAPHRAGM OPERATED PUMP

Manfred P. H. Schlanzky, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 16, 1972, Ser. No. 307,331

Int. Cl. F04b *49/00*

U.S. Cl. 417—274 **4 Claims**



1. In a fluid compressor and drive assembly, rotatable drive means for driving said compressor, a housing for said rotatable drive means, said housing having an opening therethrough and having cylindrical wall means fixed to said housing extending from said opening, said compressor comprising a compressor casing having an enlarged annular head portion and having reduced diameter tubular extension mounted for sliding telescopic movement with respect to said cylindrical wall means, fastener means for releasably securing said tubular extension to said wall means of said housing, piston means mounted for reciprocal movement in said head portion and cooperating therewith to provide an expandable and contractable chamber therein, fluid supply means operatively connected to said chamber for supplying fluid thereto in response to the expansion of said chamber, fluid exhaust means operatively connected to said chamber for exhausting fluid therefrom in response to the contraction of said chamber, piston drive means for stroking said piston means in said head portion to expand and contract said chamber, said piston drive means extending longitudinally through said tubular extension of said compressor casing and said opening in said housing into engagement with said rotatable drive means, support means mounted in said tubular extension, said support means having a cylindrical head portion fitted into said tubular extension of said compressor casing adjacent to said piston means, said support means further having bearing sleeve means radially inwardly of said head portion for slidably supporting said piston drive means, elongated helical spring means operatively connected between said head portion and said piston drive means providing a force for moving said compressor casing linearly outwardly with respect to said housing so that said casing can be subsequently fixed at a predetermined station with respect to said housing by said fastener means and for maintaining said piston drive means in contact with said rotatable drive means.

3,841,797

POWER UNITS

William Maurice Bard Fitzgerald, R.R. 1, Claremont, Ontario, Canada

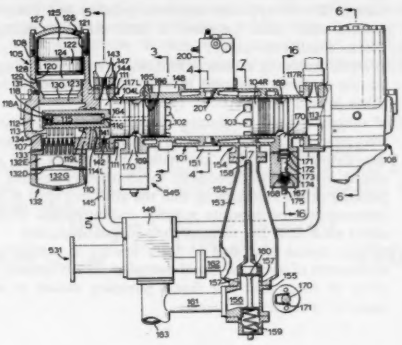
Filed Nov. 10, 1972, Ser. No. 305,453

Claims priority, application Great Britain, Nov. 18, 1971, 53721/71

Int. Cl. F04b *17/00*; **F02b** *71/00*

U.S. Cl. 417—323 **30 Claims**

1. A power unit comprising a free piston engine having a reciprocatory power piston and a hydraulic pump piston coacting therewith, the pump piston working in a pump chamber having an inlet opening and a delivery opening, a constant displacement hydraulic accumulator connected to the pump chamber to receive hydraulic fluid therefrom during the power stroke of the engine and to return the fluid thereto during the compression stroke of the engine, a first one-way valve in the inlet opening and operable in response to the



discharge of the accumulator to a predetermined minimum level to admit hydraulic fluid to the pump chamber during the compression stroke of the engine, and a second one-way valve in the delivery opening and operable in response to the charging of the accumulator to a predetermined maximum level to deliver hydraulic fluid under pressure from the pump chamber during the power stroke of the engine.

3,841,798

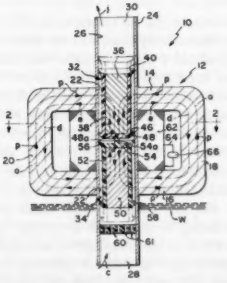
ELECTROMAGNETIC SELF-PRIMING PUMP

Fred L. J. Rehfeld, Saginaw, Mich., assignor to O'Dell Manufacturing Inc., Saginaw, Mich.

Filed Mar. 1, 1973, Ser. No. 337,076

Int. Cl. F04b *35/04*

U.S. Cl. 417—419 **35 Claims**



1. An electromagnetically driven, liquid pump comprising:

housing means having an axial liquid passage with an inlet and an outlet;

pumping mechanism comprising a pair of axially aligned, magnetizable, liquid pumping means received in said

passage, at least one of said pumping means being mounted for axial movement between a removed position in which said pumping means are axially spread to provide a liquid receiving chamber therebetween for receiving liquid from said inlet, and a position in which said pumping means are less spread to pump liquid from said chamber to said outlet;

magnetic field producing means for magnetizing said pair of liquid pumping means such that the axially adjacent ends thereof are of opposite magnetic polarity and attracted toward each other to move at least said one pumping means toward the other;

said liquid pumping means comprising elements of magnetizable material disposed in axial prolongation of each other in said passage;

said magnetic field producing means comprising electromagnetic coil means including means for establishing an alternating flux which alternately magnetizes said elements in opposite directions to alternately reverse the polarity of the elements so that the adjacent ends of said elements are of opposite polarity and attracted to each other each time the elements are magnetized; and

yieldable means reactable to store energy in response to movement of said one liquid pumping means toward the other to force said one liquid pumping means to said removed position.

3,841,799

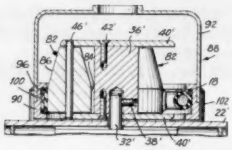
MEDICAL CASSETTE PUMP

Dom Spinosa, Wantagh, L. I., and John M. Varga, Bayville, both of N.Y., assignors to East/West Medical Products, Inc., Syossett, N.Y.

Division of Ser. No. 174,019, Aug. 23, 1971, abandoned. This application Jan. 17, 1973, Ser. No. 324,464

Int. Cl. F04b *43/08, 43/12, 45/06*

U.S. Cl. 417—477 **2 Claims**



1. A medical cassette pump comprising drive means; a fluid drive assembly operatively coupled to said drive means for rotation thereby about a principal axis, said fluid drive assembly including at least two planetray rollers freely rotatably mounted in space relation to said principal axis and to each other, said planetary rollers being formed with a cylindrical portion and a conical portion extending from one end of said cylindrical portion; a fluid carrying tube; and displaceable cassette means for releasably engaging said fluid carrying tube against the cylindrical portion of at least one of said planetary rollers for the displacement of said fluid therealong, said cassette means being formed with a central opening therein dimensioned to receive said fluid drive assembly, a portion of the inner periphery of said central opening being defined by a channel facing said principal axis dimensioned to receive said fluid carrying tube with portions thereof extending laterally from said channel for the gradual riding on and compression of said fluid carrying tube by the conical portion of at least one of said planetary rollers as said cassette means is displaced along said principal axis until said channel is in registration with said cylindrical portion of said planetray rollers.

3,841,800

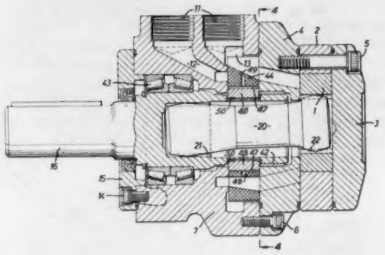
GEROTOR DEVICE W'TH HYDRAULIC VALVE COMPENSATING MEANS

Carl Verner Ohrberg, Nordborg, Denmark, and Carsten Georg Otto Petersen, Waldenburg, Germany, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 226,658, Feb. 16, 1973, Pat. No. 3,771,905. This application Apr. 30, 1973, Ser. No. 355,974

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—61 B **6 Claims**



1. A rotary piston machine comprising a housing, relatively rotatable toothed members for forming expansible and contractible chambers with at least one of said members being a movable toothed member which is movable relative to said housing, rotatable valve means, means maintaining said rotatable valve means in axially fixed relation relative to said housing, stationary valve means cooperable with said rotatable valve means, shaft means connecting said movable toothed member and said rotatable valve means, there being unavoidable circumferential play between said movable toothed member and said rotatable valve means, and hydraulically operated means for adjustingly rotating said rotatable valve means relative to said movable toothed member to compensatingly provide synchronous alignment and registration of the respective valve porting means between said movable and stationary valve means.

3,841,801

GEROTOR TYPE MOTOR WITH PRESSURE BIASED ROTARY VALVE

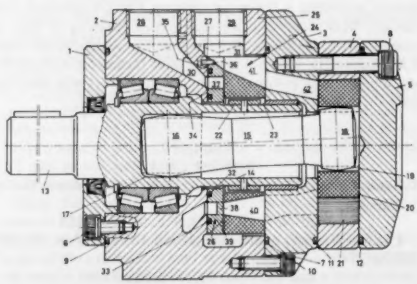
Leif Viggo Sturlason, and Carl Verner Ohrberg, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed June 14, 1973, Ser. No. 369,928

Claims priority, application Germany, June 13, 1972, 2229649

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F16k** *25/00*

U.S. Cl. 418—61 B **3 Claims**



1. A gerotor type rotary piston machine comprising a casing having a main axis, expansible chamber means having cycli-

cally movable chamber forming means, rotatable shaft means connected to said chamber forming means, an annularly shaped valve mounted in said casing for rotation about said main axis, said valve being in surrounding relation to said shaft between the opposite ends thereof, fluid passages in said casing between said valve and said expansible chamber means, drive means connecting said rotatable shaft means and said valve in driving relation, said valve having first and second sets of circumferentially extending and alternately arranged inlet and outlet ports cooperable with said casing passages, said second set of valve ports being spaced from the inner and outer circumferences of said valve, an annularly shaped pressure plate in abutting engagement with said valve, said pressure plate being rotationally fixed relative to said casing and axially movable relative to said valve, said pressure plate having first and second fluid passage means having fluid communication with said first and second sets of valve ports, said second fluid passage means being spaced from the inner and outer circumferences of said pressure plate, first and second annularly shaped channels in said casing having respectively fluid communication with said first and second pressure plate fluid passage means, said second annularly shaped channel having the mouth thereof in radial registration with said second fluid passage means, said pressure plate having first and second surface portions respectively radially inwardly of said first and second annular channels with at least one of said surface portions being subjected to pressurized fluid in either of said annular channels to axially bias said pressure plate into abutting engagement with said valve.

3,841,802
ENERGY CONVERSION DEVICE

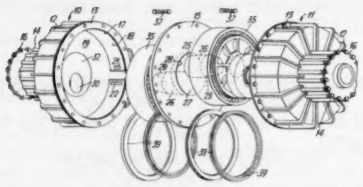
Gene Van Grecken, Sydney, Australia, assignor to Gvang Motor Company Pty. Limited, Brookvale, New South Wales, Australia

Filed Feb. 26, 1973, Ser. No. 335,672

Claims priority, application Australia, Mar. 10, 1972, 39874/72

Int. Cl. F03c *3/00*

U.S. Cl. 418—66 **2 Claims**



1. An energy conversion device comprising

two opposed, in-line chambers, each generally cylindrical in form, mounted in back-to-back relationship, each having an axially extending pocket extending beyond its periphery,

a common end wall separating said chambers,

a generally cylindrical piston member mounted eccentrically within each chamber for orbital motion therein,

inlet and exhaust ports opening into each chamber, the respective ports in each chamber being separated in the direction of orbital motion of the piston member,

a partition member in the form of a tongue extending radially outwardly from the periphery of each piston member and into said pocket within the circumferential wall of the respective chambers and the partition members being supported within the respective pockets for pivotal and rectilinear movement, whereby, during any one orbital cycle of the piston members, there is in each chamber at least two zones of varying volume defined by the periphery of the piston member, the circumferential wall of the chamber and the partition member,

a crank shaft extending in a longitudinal direction through the two chambers and through the common wall of the chambers, the crank shaft having out-of-phase crank axles which mount the piston members for said orbital motion within the respective chambers, and

motion translating members journaled within the opposed end walls of the two chambers for rotation concentrically with the axis of the chambers' circumferential walls, the respective motion translating members each having eccentric journals therein which support and which are engaged in driving relationship with end portions of the respective crank axles of the crank shaft.

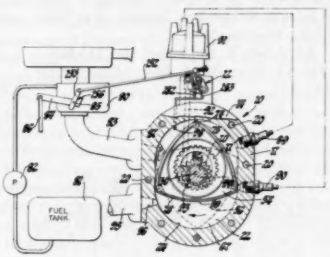
3,841,803
ROTARY ENGINE OIL METERING PUMP

Robert E. Morgan, and James D. Palma, both of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1973, Ser. No. 357,072

Int. Cl. F04c *29/02*

U.S. Cl. 428—84 **10 Claims**



1. A rotary engine comprising a housing, an output shaft rotatably mounted in said housing, a rotor rotatably mounted on said output shaft, gas seals mounted on said rotor and engaging said housing, and a throttle for controlling delivery of an air-fuel mixture to run said engine, an oil metering pump comprising a pump body having a bore; a pump shaft mounted in said bore for rotation about an axis; means drivingly connecting said output shaft to rotate said pump shaft; said pump shaft having an axially extending cylinder open through one end thereof and spaced from said axis; a piston mounted for reciprocal movement in said cylinder; said piston and cylinder cooperatively defining a chamber whose volume varies when said piston is reciprocated in opposite expanding and contracting directions; an inlet port in said pump body opening through said bore for supplying oil to said chamber; an outlet port in said pump body opening through said bore at an axial location opposite said inlet port for receiving oil from said chamber; a discharge passage in said pump body connected to said outlet port; passage means for delivering oil from said discharge passage to lubricate said gas seals; a timing port in said pump shaft at the same axial location as said inlet and outlet ports for alternately connecting said inlet and outlet ports to said chamber during each revolution of said pump shaft; a plate mounted in said pump body opposite said piston for movement about an axis intersecting and at right angles to said axis of said pump shaft; biasing means for biasing said piston outward of said cylinder in said expanding direction against said plate; plate control means mounted in said pump body for tilting said plate about said plate axis from a position perpendicular to said pump shaft axis whereby on turning of said pump shaft said piston is caused to move in said contracting direction and have a stroke that increases with increasing tilting of said plate; means operatively connecting said throttle

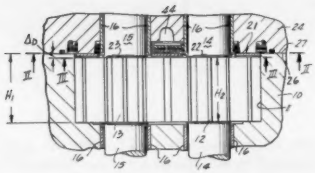
to said plate control means so that said plate control means is effective to increase piston stroke with increasing throttle opening; said inlet and outlet ports located on radially opposite sides of said plate axis and relative to the tilting direction of said plate with increasing throttle opening so that said inlet port connects with said chamber during chamber expansion and said outlet port connects with said chamber during chamber contraction; and balance valve means mounted for reciprocal movement in said outlet port and acted on in opposite directions by oil pressure in said outlet port and said inlet port, respectively, for providing controlled valve connection between said outlet port and said discharge passage to establish pressure balance between said inlet port and said outlet port so that the oil being displaced by said piston is pumped at a pressure equalling the pressure at said inlet port and oil is supplied to said passage means at a rate which increases with increasing output shaft speed and increasing throttle opening.

3,841,804

FLOATING PLATE FOR END CLEARANCE SEAL ON GEAR PUMPS

Gilbert H. Drutchas, Birmingham; Phillip B. Spencer, Royal Oak, and John A. Hovanchak, Detroit, all of Mich., assignors to TRW Inc., Warren, Mich.

Filed Feb. 8, 1973, Ser. No. 330,867
Int. Cl. F01c *19/08;* **F04c** *15/00, 27/00*
U.S. Cl. 418—131 **5 Claims**



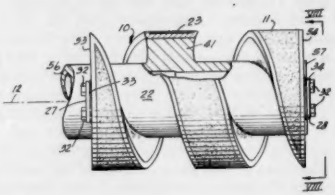
1. In a gear pump,
a housing having a radial wall and having a gear pocket cavity with a cavity wall of depth H_1,
a pair of gears in said gear pocket cavity having a gear height H_2 of lesser height than H_1, thereby leaving a drop-off Δ D between said radial wall and the side faces of the gears,
a floating plate in said gear pocket cavity in freely floating relation with peripheral clearance between the plate perimeter and the adjoining cavity wall forming a gap,
a cover for closing said gear pocket cavity and having a radial wall abuttingly engaging said radial wall of said housing,
said cover having formed inwardly of said radial wall an ovaloidal recess somewhat larger than said gear pocket cavity and constituting spaced axially extending walls terminating in a generally radially extending wall to form a peripherally continuous channel,
deformable firm base means in said channel conforming in shape to said channel and forming an elastically deformable bridging means to bridge the drop-off gap and Δ between the housing radial wall and the floating plate,
and pressure means including said channel behind said base means and energized by pump-generated pressure to provide transitory mechanical force through said base means to said floating plate only in response to said pump-generated pressure whereby said floating plate and base means seal the side faces of the gears.

3,841,805

SCREW LINER

Albert A. Zalis, Warren, Mass., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,886
Int. Cl. F01c *1/16, 21/00;* **F04c** *1/10*
U.S. Cl. 418—178 **9 Claims**



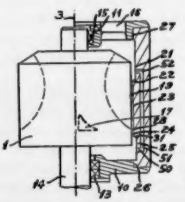
1. A replacable flight liner for screw flights in screws of the type adapted for pumping fluid-like material through a casing member housing such screw, said flight liner comprising —
A. a spirally extending, elongated rigid strip having —
1. generally radial symmetry with respect to a longitudinal axis.
2. a longitudinal, axially extending average outer width generally greater than the thickness thereof except at opposite end regions thereof,
3. generally parallel, opposed inner and outer faces,
4. said inner face having a radius and a longitudinal, axially extending average inner width adapted to make said inner face be in face-to-face engagement with the circumjacent flight surfaces of a pumping screw,
B. hard surfacing means integrally imbedded in said outer face and continuously extending over the mid region thereof generally between opposed, longitudinally adjacent, axially extending edge regions thereof, and
C. demountable mounting means secured to each longitudinally opposite end portion of said strip and adapted to secure said strip to the pumping screw in fixed spatial relationship, said mounting means being radially positioned so as not to extend outwardly of said outer face.

3,841,806

COMPRESSORS AND EXPANSION MACHINES OF THE WORM AND PINION TYPE

Bernard Zimmern, c/o S. J. Rudy, 8 E. 44th St., New York, N.Y. 10017

Filed Apr. 5, 1973, Ser. No. 348,159
Int. Cl. F04f *5/36*
U.S. Cl. 418—195 **2 Claims**



1. A compressor or expansion machine for gases comprising a shaft which turns about an axis of rotation, a worm mounted on said shaft and provided with a plurality of threads disposed in a helix and forming projections, the crests of said threads being disposed on a surface of revolution about said axis, a

stationary casing surrounding said worm at least partially and in substantially leak-tight contact with at least part of the crest line of said threads, at least one pinion provided with teeth which are disposed in meshing engagement with said threads and rotate about an axis which is transverse with respect to the axis of rotation of said shaft, that face of said teeth which is exposed to the high pressure being disposed on a surface of revolution about said transverse axis, at least one low-pressure port being disposed on one side of said worm whilst a high-pressure port is disposed on the opposite side in the immediate vicinity of said pinion, said worm being provided on the same side as the high-pressure port with an extension which is such that the periphery thereof is disposed on a surface of revolution about the axis of rotation of said shaft and which cooperates in substantially leak-tight manner with said casing, and characterized in that the zone of said casing which cooperates in substantially leak-tight manner with said extension has in the direction parallel to the axis of rotation of said worm a maximum width in the vicinity of said high-pressure port.

3,841,807

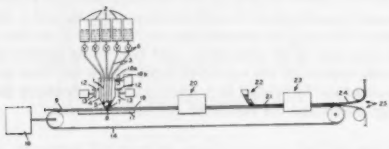
MARBLEIZING APPARATUS

John B. Weaver, 111 Wellington Rd., Lancaster, Pa. 17603

Division of Ser. No. 87,068, Nov. 5, 1970. This application Oct. 10, 1972, Ser. No. 296,111

Int. Cl. B29d *7/00*

U.S. Cl. 425—104 **1 Claim**



1. An apparatus for producing a controlled and substantially reproducible marbleized plastic sheet material comprising:

1. At least one receptacle for receiving and dispensing plastisol compositions,
2. fluid access means in the upper portion of said receptacle and a dispensing opening in the bottom thereof,
3. rotatable ball-shaped fluid-applicating means positioned in the bottom opening in said receptacle,
4. means for feeding a plurality of streams of plastisols having differing decorative characteristics to said receptacle to form a heterogeneous mixture thereof,
5. a movable support means adapted to carry a substrate having a non-adherent top surface,
6. means for mounting said receptacle above said substrate and its support means with said fluid-applicating means adapted to be moved into and out of contact with the substrate,
7. means for moving said fluid-applicating means into and out of contact with said substrate,
8. means for moving the substrate which thereby rotates the fluid-applicating means when in contact therewith,
9. means for moving the fluid-applicating means in an irregular pattern on the surface of said substrate to form a marbleized coating thereon,
10. means for gelling the marbleized coating,
11. means for applying a clear plastisol coating over said marbleized coating,
12. means for fusing the marbleized and clear plastisol coatings,
13. means for stripping the resulting clear coated, marbleized composite sheet from the non-adherent surface of the substrate, and
14. control means on the means for feeding the plurality of streams of plastisol to individually control the flow of said plastisol streams to achieve different design characteristics.

3,841,808

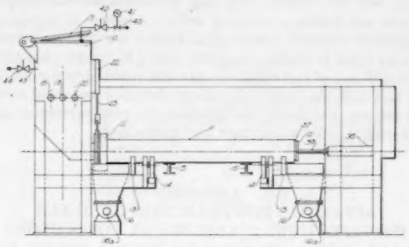
FILLING AN ANNULAR SPACE BETWEEN RADIALLY SPACED COAXIAL TUBES WITH FOAMED CEMENT

Leon Hacker, Springfield, Ill., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Jan. 23, 1973, Ser. No. 325,998

Int. Cl. B28b *23/02*

U.S. Cl. 425—110 **5 Claims**



1. An apparatus for filling the annular cylindrical space between coaxial tubes having bracing and spacing means therebetween and constituting a double-walled pipe, comprising a reservoir of foamed grout, a filling head in communication with said reservoir, said filling head having members forming an annular passage in communication with said reservoir to accept one end of said pipe for guiding said grout into said annular cylindrical space and means to seal the inside of the inner one of said tubes and the outside of the outer of said tubes thereagainst, support means for said pipe, a back-up means for thrusting said pipe axially into position with respect to said filling head, said back-up means leaving said annular space open to atmosphere, means associated with said filling head to control the admission of grout to said space, and means to put said reservoir under pressure.

3,841,809

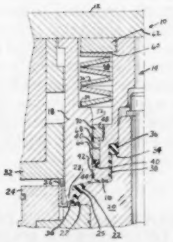
SEAL FOR RUBBER MOLDS

Alfred J. Tucker, Elgin, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed Sept. 8, 1972, Ser. No. 287,228

Int. Cl. B29h *9/00*

U.S. Cl. 425—110 **5 Claims**



1. A mold unit for flashless molding of composite parts, said mold unit including first and second mold assemblies, at least one portion of said first assembly and one portion of said second assembly having generally oppositely directed surface portions defining the interior of a molding cavity in the closed position of said mold, a land on a portion of said second assembly for engaging a downwardly facing, radially extending surface of a relatively rigid insert element constituting one of said composite parts, means on said second assembly for

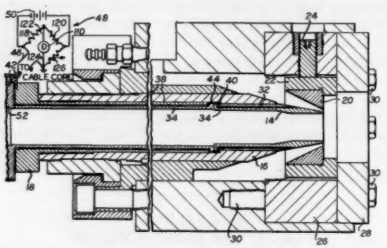
receiving and supporting a portion of uncured rubber to be forced into said molding cavity, said first assembly including inner and outer concentrically disposed mold parts arranged for axial movement relative to each other, a land on said first assembly adapted to engage an upwardly facing portion of said radially directed surface, axially extending means forming a compressible, resilient connection between said relatively movable mold parts, a circumferentially extending annular seal ring support means in one of said movable parts, a lubricous, stiff but resilient seal ring positioned on said support means and having a working surface adapted to engage an oppositely directed surface of said other movable part under a given force to create a snug but sliding fit, means associated with said one of said relatively movable mold parts for confining said seal ring on all the surfaces thereof except said working surface, and means for adjusting the confinement of said seal ring in order to increase said given force.

3,841,810

APPARATUS FOR DETECTION OF SHIELD IMPERFECTIONS IN ELECTRICAL CONDUCTORS

Daniel E. Robinson, Metuchen, and Robert A. Schmidt, Denville, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,641
Int. Cl. B29f *3/00*
U.S. Cl. 425—113 **10 Claims**



1. Apparatus for detecting imperfections in strand shields on electrical cable conductors including in combination an extruder that extrudes a layer of insulation over the strand shield, the extruder comprising a die and a tip within the die and forming with the die an outlet orifice through which the insulation is extruded, the tip having an axial passage through which the strand shielded conductor passes with continuous motion, means for maintaining an electrical potential between the tip and the conductor, and means for detecting changes in current produced by said potential, from a normal current, as a result of variations in resistance between the tip and conductor, an interior surface of the axial passage of the tip being adjacent to the surface of the strand shield on the conductor.

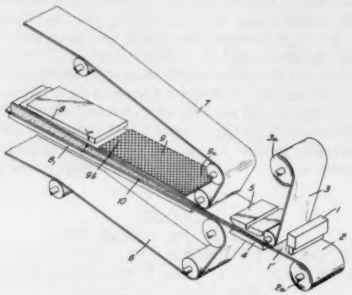
3,841,811

EQUIPMENT FOR THE CONTINUOUS PRODUCTION OF PANELS OF SYNTHETIC MATERIAL

Jean Marie Raymond Peille, Esperaza, France, assignor to Societe Industrielle de Stratifies, Aude, France

Filed Feb. 7, 1972, Ser. No. 224,055
Int. Cl. B29d *27/00*
U.S. Cl. 425—115 **2 Claims**

1. An apparatus for the continuous manufacture of panels comprised of expanded synthetic material of the type where a facing is applied to each side of the synthetic material comprising a flow path along which said panels are manufactured, means for supplying said upper and lower facings in continuous sheets along said flow path, means for depositing said synthetic material between said sheets while it is substantially in its liquid phase, first means for shaping said synthetic material, said first means being disposed in contact with each of said facing sheets and having an outlet through which said facing sheets pass, second means for shaping said synthetic material, said second means comprising first and second conveyor bands which are disposed above and below said flow path and which are in engagement with said upper and lower



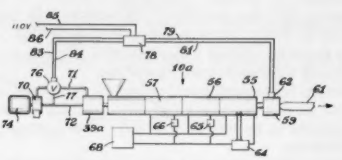
facing, said bands extending downstream from said outlet of said first means so that as said synthetic material expands its shape is maintained by said conveyor bands, and a flexible mesh form belt, the downstream end portion of said belt being deformable in all directions, said belt being applied to the outer surface of the conveyor band above said flow path to prevent the formation of pockets and folds between the facings sheets and the expanded synthetic material.

3,841,812

EXTRUSION APPARATUS

Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 96,897, Dec. 10, 1970, Pat. No. 3,764,043, which is a division of Ser. No. 803,348, Feb. 28, 1969, Pat. No. 3,619,329. This application Mar. 19, 1973, Ser. No. 342,354
Int. Cl. B29f *3/06*
U.S. Cl. 425—149 **2 Claims**



1. A screw extruder particularly adapted and suited for deposition of material on a fixed base or support, the extruder comprising in cooperative combination
a barrel having
a feed end and
a discharge end, the barrel defining
a generally cylindrical cavity, the barrel having
a plurality of heating zones, each of the zones having
means to inductively heat the zone and
fluid heat transfer means associated therewith,
an extrusion screw disposed within said cavity,
means to rotate said screw at a variable rate,
a pressure sensing means disposed adjacent said discharge end to sense the pressure of extruded material discharging from said cavity,
a control means in operative association with said pressure sensing means and said means to rotate the screw to

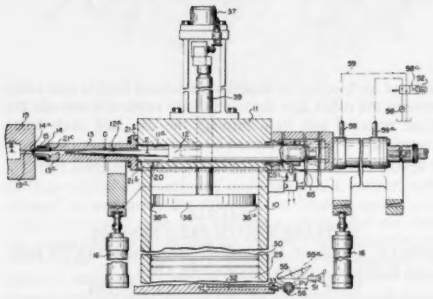
thereby maintain a generally constant output pressure,
a forming head positioned to receive an extrude from the extruder and form the extrude to a desired configuration, the forming head having in operative combination therewith
means to detect a cross-sectional deviation of the extrude in operative combination with
means to propel said head and extruder, to thereby maintain a generally constant cross-section of said extrude.

3,841,813

WAX INJECTION NOZZLE WITH RELIEF RESERVOIR

Virgil V. Stanciu, Rocky River, Ohio, assignor to Tempcraft Tool & Mold, Inc., Cleveland, Ohio

Filed Oct. 6, 1972, Ser. No. 295,492
Int. Cl. B29f *1/03*
U.S. Cl. 425—159 **7 Claims**



1. In apparatus for injecting molten wax or the like into a mold or die having a gate, the combination of a storage reservoir of molten wax, means for controlling flow of said wax from said reservoir to said gate including a nozzle housing communicating with said reservoir, and having an outlet adapted to be placed in communication with said gate and a valve mounted in said housing for movement between a closed and open position, a valve seat in said housing against which said valve closes, there being a passageway connected with and communicating between the wax in said storage reservoir and said outlet through said housing and past said valve in its open position, said valve and said housing providing an opening through said passageway until said valve is fully closed, a pressure relief reservoir mounted adjacent said outlet end of said housing and having a bore always communicating with said passageway through said housing adjacent said outlet in position to receive hot wax propelled by said valve near the end of its closing movement, pumping means drivingly associated with hot wax in said pressure relief reservoir for pumping wax out of said bore into said passageway, said puping means having means rendering it active when said valve is open and moving toward closed position, said pumping means rendering it inactive thereafter while said valve is still moving toward closed position, whereby said pressure relief reservoir is purged of the wax collected therein just before the final closing of said valve against its seat, means for forcing wax from said storage reservoir into said passageway, and means for causing opening and closing of said valve.

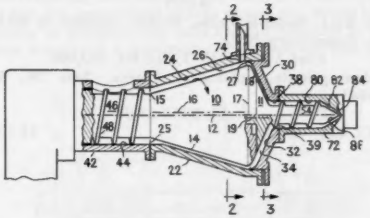
3,841,814

APPARATUS FOR PROCESSING PLASTIC MATERIALS

Hans A. Eckhardt, 55 Cresent Bend, Allendale, N.J. 07401

Filed Apr. 3, 1972, Ser. No. 240,444
Int. Cl. B29f *3/02*
U.S. Cl. 425—208 **22 Claims**

1. Apparatus for processing plastic material comprising
an increasing housing having an interior surface symmetric to the center line thereof, said interior surface having an interior circumference increasing from a first circumference, the housing entrance circumference, to the large housing circumference;
a revolving member surrounded by said housing interior surface in spaced relationship to define a processing space therebetween, said member having a surface increasing from a first circumference, the member entrance circumference, to the large member circumference, the member's increasing surface being symmetric to the member's axis;



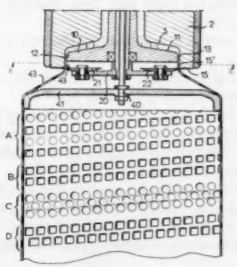
said member being mounted revolvably about said axis;
the center line of the increasing housing's interior surface having a radial distance from said axis of revolution;
means for revolving said member;
means for introducing plastic material in said processing space near said entrance circumference;
so that during each revolution every point of the revolving member interior surface undergoes a change in distance to the housing interior surface varying between a maximum and a minimum distance,
thus subjecting the plastic material to a circular and spiral kneading and milling treatment.

3,841,815

MACHINE FOR PRODUCING PERFORATED SLEEVES

Maurice Labarre, 5 bis Ave. Pierre Grenier, 92 Boulogne, France

Filed Nov. 30, 1972, Ser. No. 310,784
Claims priority, application France, Dec. 2, 1971, 71.43207; Nov. 16, 1972, 72.40691
Int. Cl. B29c *24/00*
U.S. Cl. 425—290 **27 Claims**



1. In a machine for producing a tubular perforated sleeve by extrusion of plastic material of the type having a cylindrical extrusion head having an annular slot for forming a solid-walled tubular sleeve during use, and means for enlarging perforations by at least one of transverse or longitudinal drawing of the sleeve, wherein the improvement comprises means for perforating the sleeve comprising at least one toothed roller mounted for rotation about an axis parallel to and

spaced from the longitudinal axis of the cylindrical extrusion head in that the roller teeth penetrate through the tubular sleeve after the sleeve has issued from the extrusion head, means mounting said roller for rotation about the longitudinal axis of the extrusion head and means for effecting rotation of said roller about both the longitudinal axis of the extrusion head and its axis of rotation to perforate the sleeve with the rotating teeth.

3,841,816

APPARATUS FOR EXTRUDING TUBING FOR FASTENER BAGS

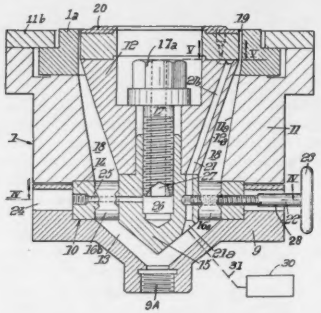
Andre Herz, Nesles-la-Vallee, France, assignor to Minigrip Inc., Orangeburg, N.Y.

Filed Apr. 14, 1972, Ser. No. 243,966

Claims priority, application France, June 30, 1971, 71.23943

Int. Cl. B29d *23/04*

U.S. Cl. 425—326 R **15 Claims**



1. A mechanism for making a continuous plastic tube with fastener profiles on the surface thereof for use in making reclosable bags comprising,

a die head having an annular die opening for extruding continuous tubing and having shaped profile die openings for forming mating complementary interlocking rib and groove profile elements on the tube surface, first plastic delivery means for delivering tube forming plastic to the die opening and having a plastic flow channel,

second plastic delivery means for delivering profile forming plastic to the profile die openings comprising a plastic conduit separate from said flow channel leading to the profile openings,

first control means for controlling the rate of flow of plastic to said die,

second control means in said conduit for controlling the rate of flow of profile forming plastic,

means for directing gas into the tube issuing from the annular die opening to form the plastic tube and determine its diameter, third control means for controlling the flow of gas to control the diameter of the tube,

said second control means controlled as a function of said first and third means so that the size of the profiles will remain constant with change of diameter or thickness of the tube due to changes of said first and third control means.

3,841,817

PELLETIZING APPARATUS

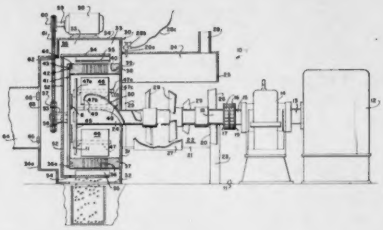
August J. Moldenhauer; Melvin A. Moldenhauer, and Richard J. Moldenhauer, all of Menfro, Mo. 63765

Filed Sept. 19, 1973, Ser. No. 398,854

Int. Cl. B29c *3/02;* **B29f** *3/012;* **B30b** *3/02, 11/20*

U.S. Cl. 425—331 **13 Claims**

1. A pelletizing apparatus comprising a mixing chamber for receiving the material to be pelletized and a fluid, a mixing shaft rotatably mounted in the mixing chamber, a stationary extrusion die in communication with the mixing chamber, at least one extrusion roller mounted on the mixing shaft for rotation therewith and operatively associated with the die, and means on the mixing shaft for mixing said material and said



fluid and for feeding the mixed material and fluid to said roller between the roller and die so that said roller will extrude the mixed material and fluid through the die, said shaft being substantially wholly supported by said roller engaging the die so that no bearings are required for supporting said shaft.

3,841,818

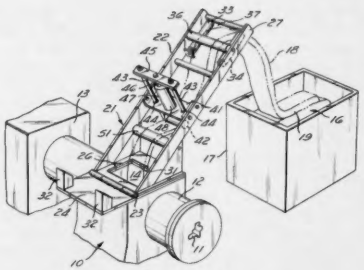
EXTRUDER WITH FEED SYSTEM

Andrew C. Forschner, Middlefield, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio

Filed Jan. 24, 1973, Ser. No. 326,183

Int. Cl. B29f *3/02*

U.S. Cl. 425—376 **8 Claims**

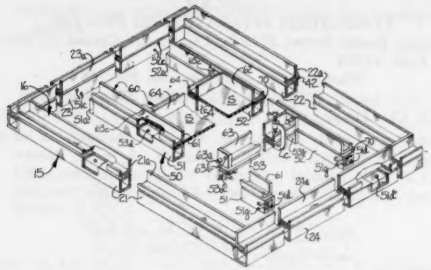


1. An extruder feed system comprising a source of uncured elastomeric stock in ribbon form in which said ribbon is folded back and forth in a stack of horizontally extending reaches, an extruder laterally spaced from said source having a feed opening and operable to pull said ribbon stock into said feed opening, and a conveyor providing first non-driven guide means positioned substantially above said source and operable to guide said ribbon from said source in a generally vertical direction and second non-driven guide means operable to position said ribbon from said first guide means for movement into said feed opening without sufficient contact with the sides thereof to appreciably impair movement of said ribbon, operation of said extruder pulling said ribbon from said source and through both of said guide means into said feed opening, said conveyor including adjustable means operable to resist movement of said ribbon stock into said feed opening with a force which is adjustable to adjustably determine the rate of removal of stock from said source.

3,841,819
VACUUM FORMING MACHINE MODULAR CLAMPING FRAMES

Harvey J. Diamond, Charlotte, N.C., assignor to Plasti-Vac Inc., Charlotte, N.C.

Filed Oct. 3, 1972, Ser. No. 294,660
Int. Cl. B29c *17/00*
U.S. Cl. 425—388 **7 Claims**



1. In a vacuum forming machine for molding a thermoplastic sheet about a suitable die and including a vacuum table adapted to support a die thereon and heating means positioned above said table and defining an oven adjacent which the plastic sheet is positioned for heating prior to forming; the combination therewith of a clamping frame assembly for securely supporting different sizes of thermoplastic sheets therein, one at a time, during heating and forming; said clamping frame assembly comprising

a pair of complementary first and second substantially rectangular main clamping frames,

means pivotally interconnecting said main clamping frames adjacent one edge portion thereof,

a pair of complementary first and second auxiliary clamping frames within the respective first and second main clamping frames, said auxiliary clamping frames each comprising a first pair of front and rear spaced substantially parallel modular rails, and a second pair of spaced substantially parallel modular rails secured to and extending transversely of and between said first pair of rails,

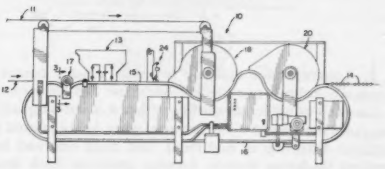
means releasably securing opposite ends of said first pair of modular rails of said first auxiliary clamping frame to opposite side portions of said first main clamping frame, means pivotally connecting said rear modular rail of said second auxiliary clamping frame to the adjacent rear modular rail of said first auxiliary clamping frame so that said second auxiliary clamping frame is movable about its pivot relative to said first auxiliary clamping frame and relative to both of said main clamping frames, and means for releasably clamping said first and second auxiliary clamping frames together for clampingly securing a thermoplastic sheet therebetween.

3,841,820
PACKAGING FORMING APPARATUS

Andrew H. Vedvik, Madison, and Melvin M. Layman, Waunakee, both of Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

Filed June 15, 1973, Ser. No. 370,394
Int. Cl. B29c *17/04*
U.S. Cl. 425—388 **6 Claims**

1. In apparatus for packaging individual articles or quantities of a material at least in part in cavities formed in a web of packaging film that is at least temporarily in deformable condition, in combination, an endless chain of die plates having a generally horizontal upper run and which die plates when moving in said generally horizontal upper run have upwardly opening article-receiving cavities therein with each surrounded by a generally planar surface for mating temporarily with a superposed planar surface, each of said die plates having a passageway therein communicating between a suction opening in its said planar surface and the interior of said cavity therein, and means cooperating with each of said die plates to deform said lower web of film into the cavity therein and press said lower web of film down onto the generally planar surface surrounding said cavity, said means comprising: roll means mounted for rotation above and adjacent to the head end of said upper run with the axis of rotation thereof being horizontal and extending transversely to the direction of travel of said upper run, the longitudinal surface of said roll means having a plurality of elongated flat sides each of which in its nadir position constitutes a superposed planar surface that mates

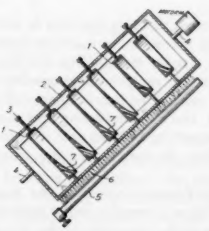


temporarily with the planar surface of one of said die plates, each of said flat sides having an opening therein which registers in sealed communication with the suction opening in the mating die plate planar surface, said roll means having passageways therein equal in number to said elongated flat sides thereon with each passageway communicating at one end with the opening in one of said flat sides and at the other end with an opening in one end of said roll means with said end openings being arranged in a circle concentric with said axis of rotation, and a stationary suction plate mating over said one end of said roll means and having a passageway therein providing communication between an exterior suction connection and each of said end openings as said end openings have temporary communication with the suction opening in the planar surface of one of said elongated lower die plates.

3,841,821
APPARATUS FOR THE ROTATIONAL MOLDING OF THERMOPLASTIC ARTICLES

Stuart Pivar, Muttontown, L. I., N.Y., assignor to Rototron Corporation, Farmingdale, N.Y.

Filed June 26, 1972, Ser. No. 265,997
Int. Cl. B29c *5/04*
U.S. Cl. 425—434 **7 Claims**

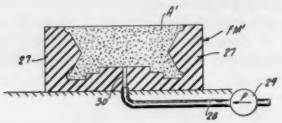


1. Molding apparatus comprising a plurality of at least substantially parallel molds, means to engage the molds peripherally to support said molds in spaced relation and to rotate the same about a single common axis, and a heat source located below said molds and supplying a flow of heat between and around said molds, said molds being open pan-shaped molds.

3,841,822
SEAMLESS ARTICLE MOLDING APPARATUS

Raymond M. Putzer, Racine, and William J. Maurino, Kenosha, both of Wis., assignors to Precision Flexmold Inc., Racine, Wis.

Division of Ser. No. 222,141, Jan. 31, 1972, Pat. No. 3,776,683. This application Oct. 3, 1973, Ser. No. 403,196
Int. Cl. B28b 7/06
U.S. Cl. 425—440 2 Claims

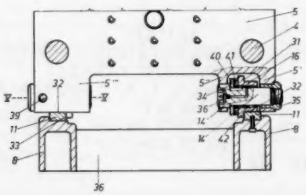


1. Apparatus for molding seamless articles comprising a generally hollow, one-piece elastomeric flexible mold having a side wall of sufficient thickness that it is self-supporting and supports the weight of the material when being poured therein without distortion of said mold, said mold side wall being of varying thickness thereby forming undercut back draft portions in said mold, means for injecting air pressure between said mold and the article therein to thereby cause expansion of said mold and permit removal of the article from the mold.

3,841,823
DIE CARRIER GUIDING DEVICE FOR INJECTION MOLDING MACHINE

Karl Hehl, 7291 Lossburg, Wuerttemberg, Germany

Filed July 26, 1972, Ser. No. 275,136
Claims priority, application Germany, July 26, 1971, 2137284
Int. Cl. B29f 1/00
U.S. Cl. 425—450.1 9 Claims



1. In an injection molding machine in which a rigid machine frame supports, among other machine components, a stationary die carrier fixedly mounted on the frame, a movable die carrier arranged for reciprocating opening and closing movements along a central die axis in cooperation with the stationary die carrier, and a die actuating unit connected to both die carriers and imparting to them said reciprocating movements, the combination therewith of a die carrier guiding device comprising:

a rigid guide frame mounted to the machine in a solidary relationship with respect to the stationary die carrier and extending in the direction of the movable die carrier;

first guide faces on said guide frame defining a primary guide plane which is parallel to the die axis;

second oppositely facing guide faces on said guide frame defining two parallel secondary guide planes which are also parallel to the die axis and perpendicular to said primary guide plane;

first guide means connected to the movable die carrier and engaging said first guide faces for supportive guidance of the movable die carrier thereagainst;

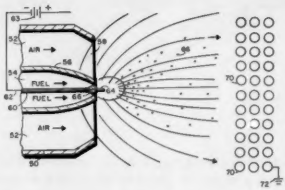
second guide means connected to the movable die carrier and engaging said second guide faces for clearance-free, non-yielding guidance of the movable die carrier thereagainst; and

means for transversely fine-adjusting the distance between the second guide means and the second guide faces so as to create a predetermined preload condition therebetween.

3,841,824
COMBUSTION APPARATUS AND PROCESS

George Frazier Bethel, 3719 Park Green Dr., Corona Del Mar, Calif. 91720

Filed Sept. 25, 1972, Ser. No. 291,748
Int. Cl. F23b 7/00; F02m 27/04; F01n 3/10
U.S. Cl. 431—8 5 Claims



1. An apparatus for combustion comprising:

a combustion chamber;

means for providing a stream of air to said combustion chamber;

means for electrically charging at least one of said streams at a first potential;

means for initiating combustion; and,

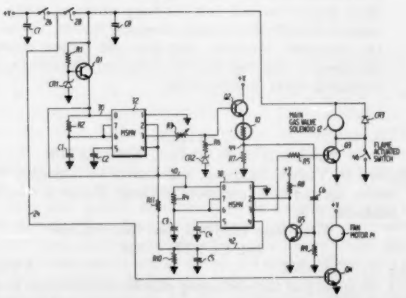
an element in said combustion chamber in distal relationship from where said stream stream are introduced to attract the combustion materials thereto

means for providing a second potential different from said first potential to said element

3,841,825
ELECTRICAL CONTROL SYSTEM

James S. Berry, P.O. 703 Patterson Rd., Savannah, Tenn. 38372

Filed July 18, 1973, Ser. No. 380,231
Int. Cl. F23n 5/20
U.S. Cl. 431—66 16 Claims



1. In a gas fired heater system of the type including a burner and valve means for controlling the flow of fuel to said burner, the improvement comprising:

catalytic ignitor means including an element positioned to contact fuel emerging from the burner;

circuit means including timing means, responsive to a signal indicating that heating is desired, for causing current flow through said ignitor means for a predetermined interval of time shorter than the duration of said signal, the duration of said predetermined interval and the magnitude of said current flow being less than that required to bring said ignitor means to a heat where it will ignite said fuel by said heat alone; and,

means for generating said signal indicating that heating is desired.

3,841,826

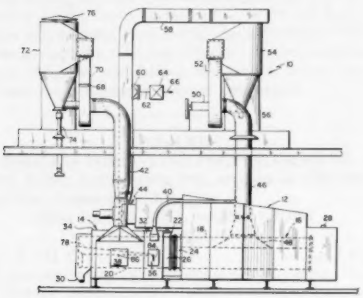
PROCESS AND APPARATUS FOR CONTINUOUSLY ROASTING BEAN-LIKE MATERIALS

John W. Angstadt, Williamsville; Kenneth R. Enberg, Tonawanda; Edgar L. Kleindinst, Buffalo; Richard J. Ring, Cheektowaga, and David B. Spence, Buffalo, all of N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.

Filed Jan. 30, 1974, Ser. No. 437,984

Int. Cl. F27b *7/20*

U.S. Cl. 432—2 **9 Claims**



1. In a continuous roaster apparatus for bean-like materials which comprises:

a. a heating section including burner means;

b. first conduit means for removing hot gaseous effluent from said heating section and in gaseous communication with said burner means;

c. a cooling section formed of at least two sub-cooling sections;

d. a second conduit means for removing a gaseous effluent from a first sub-cooling section and passing said gaseous effluent to said first conduit means;

e. a third conduit means in fluid communication with said first conduit means downstream of said second conduit means for withdrawing a portion of the gaseous effluent in said first conduit means; and

f. a second burner means for incinerating said withdrawn portion of gaseous effluent.

3,841,827

TONER RELEASE OIL TRANSFER PAD

Taghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

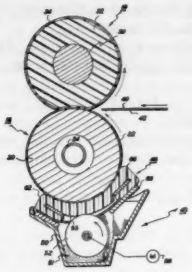
Filed June 11, 1973, Ser. No. 369,024

Int. Cl. B05c *11/00*

U.S. Cl. 432—60 **4 Claims**

1. In a heated pressure roll fusing system for fusing toner images to copy sheets of an electrostatic copying machine in which a heated fuser roll is coated with an oil to prevent toner offset, an improved oil application pad comprising

an oil transfer pad member positioned in contact with a heated fuser roll to apply oil received by said pad member continuously to the surface of said heated fuser roll during fusing of toner images to copy sheets,



said pad member having a working surface contacting said heated fuser roll made of silicone rubber sponge material which has an embossed pattern to resist visual and non-visual offset accumulation on the surface thereof.

3,841,828

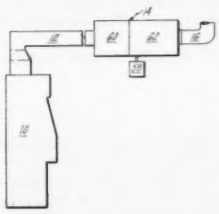
EXHAUST GAS TREATMENT SYSTEM

Raymond Edward Cooper, Milford, Conn., assignor to Liberty Industries, Inc., Berlin, Conn.

Filed Feb. 8, 1972, Ser. No. 224,444

Int. Cl. F23l *9/04*

U.S. Cl. 432—222 **7 Claims**



1. In a system for treating virus contaminated exhaust gas prior to discharge into the atmosphere, the combination including a work station having a high efficiency particulate air filter; a combustion chamber spaced from the work station, said chamber having a diverging flame zone; a conduit connecting the work station with the combustion chamber for the passage of all exhaust gas through said chamber; exhaust gas drive means for drawing said exhaust gas through the conduit and toward the combustion chamber, said combustion chamber including a fuel discharge port and an associated baffle for confining all the exhaust gas conveyed through the conduit and injecting the confined gas into the flame zone of the combustion chamber to elongate the flame downstream within the combustion chamber to effect the deactivation of all en-

trained viral particles in the exhaust gas; and effluent discharge means connected to said combustion chamber for discharging the effluent from said combustion chamber.

3,841,829

TRAVELING GRATE FOR HEAT TREATING MATERIALS

Reinhard Korting, Neubeckum, Germany, assignor to Polysius AG, Neubeckum, Germany

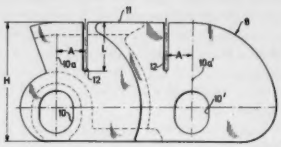
Filed Sept. 4, 1973, Ser. No. 393,809

Claims priority, application Germany, Oct. 17, 1972, 7238025[U]

Int. Cl. F23b *1/22*

U.S. Cl. 432—245 **6 Claims**

1. Traveling grate for heat treating materials conveyed through a treatment chamber comprising a continuous chain grate; and elongate upstanding side plate members at the lateral edges of said chain grate, each of said side plate members having slots threin open at their upper ends to accommodate expansion and contraction.



3,841,830

BLENDING NEUTRAL DYEING 1:2 PREMETALLIZED AZO DYED ACID MODIFIED ACRYLIC FIBER WITH THE SAME FIBER UNDYED AND DISPERSE OR CATIONIC DYEING THE BLEND

Takashi Shibukawa; Masanobu Hoten, both of Saidaiji; Naoki Hayasaki, Hirakata, and Shigeo Mizutani, Mishinomiya, all of Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 654,054, July 18, 1967, abandoned. This application June 5, 1972, Ser. No. 259,840

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 A **2 Claims**

1. In a process for preparing multi-colored acrylic fiber textile material which comprises dyeing a first textile material of an acrylic fiber containing an augmented number of acid groups but no basic groups, combining the dyed textile material with a second textile material of an undyed acrylic fiber containing an augmented number of acid groups but no basic groups by blending the dyed and undyed textile materials, and thereafter dyeing the resultant material with a cationic or disperse dye, the improvement according to which the dyeing of the first textile material is conducted at a temperature of at least 100° C in a first dye bath containing a dilute solution of a neutral dyeing 1:2 type pre-metallized acid dye and 0.5–5.0 percent by weight, based on the weight of the dye bath, of at least one salt selected from the group consisting of calcium chloride, barium chloride, zinc chloride, magnesium chloride, cadmium chloride, zinc sulfate, magnesium sulfate, zinc nitrate, cadmium nitrate and calcium thiocyanate.

3,841,831

PROCESS FOR DYEING POLYESTER FIBER

James E. Miller, Indianapolis, Ind., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 29, 1972, Ser. No. 310,497

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C **27 Claims**

1. A process for dyeing polyester fiber comprising the steps of (1) forming an aqueous dye bath consisting essentially of a small but effective amount up to 0.3 percent, by weight, disperse dye, said dye bath being at a temperature between 25°C to 100°C at atmospheric pressure; (2) immersing polyester fiber in the dye bath for a period of at least about 10 minutes; (3) rinsing the fiber with water; (4) drying the fiber; and (5) exposing the dried fiber to dry heat at a temperature between 120°C to 230°C.

3,841,832

PROCESS FOR TREATING CELLULOSIC MATERIAL WITH FORMALDEHYDE IN LIQUID PHASE AND SULFUR DIOXIDE

Ronald Swidler, Palo Alto, and Katherine W. Wilson, Newport Beach, both of Calif., assignors to Cotton, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 237,056, March 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 706,792, Feb. 20, 1968, abandoned, which is a continuation-n-part of Ser. No. 239,361, March 29, 1972, abandoned. This application Feb. 14, 1973, Ser. No. 332,332The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.

Int. Cl. D06m *13/12*

U.S. Cl. 8—116.4 **11 Claims**

1. A process for improving the dimensional stability, wrinkle resistance and smooth drying characteristics of a cellulose fiber-containing fabric which comprises:

a. depositing water and formaldehyde in the fabric to provide therein an aqueous phase comprising formaldehyde and conditioning the fabric to give the cellulose fibers a moisture content of between about 4 and 20 percent based on dry weight of cellulose;

b. heating the conditioned moisture-containing and formaldehyde-containing fabric in the presence of catalyst-forming sulfur dioxide and water vapor in a reaction zone at a temperature above about 65°C. for a time of between about 10 seconds and 2 hours until formaldehyde in an amount equal to at least 0.3 percent by weight of said cellulose fibers is durably deposited in the fabric and the cellulose fibers become effectively crosslinked, said heating being conducted while governing the amount of water in the system to control the amount of moisture in said fabric and thereby regulate the amount of strong acid catalyst formed therein by the reaction of formaldehyde and sulfur dioxide, a reaction in which water is the limiting factor, to provide a self-limiting reaction system; and

c. heating the thus crosslinked fabric to dissipate water vapor, residual catalyst and unbound formaldehyde therefrom.

3,841,833

RECOVERABLE WARP SIZING

William H. Minkema, Maple Plain, and Paul D. Whyzmuzis, St. Paul, both of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Aug. 24, 1972, Ser. No. 283,455

Int. Cl. D06l *1/14*

U.S. Cl. 8—138 **3 Claims**

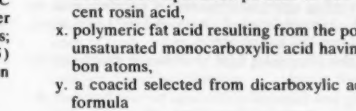
1. A process for sizing and desizing warp comprising:

A. depositing from an aqueous sizing solution consisting essentially of about 5 to 20 percent amidification product by weight and ammonium hydroxide equivalent to about 90 to 110 percent of the acid value of the amidification product, said amidification product consisting essentially of:

w. an adduct of rosin acid and an unsaturated dicarboxylic acid or anhydride selected from maleic acid, maleic anhydride and fumaric acid wherein the unsaturated dicarboxylic acid is present in amounts of about 100 to 200 equivalent percent to 100 equivalent percent rosin acid,

x. polymeric fat acid resulting from the polymerization of unsaturated monocarboxylic acid having 16 to 18 carbon atoms,

y. a coacid selected from dicarboxylic acids having the formula



wherein R is an alkylene radical containing one to eight carbon atoms and monomeric unsaturated fatty acids containing 16 to 18 carbon atoms, and monomeric unsaturated fatty acids containing 16 to 18 carbon atoms, and

z. a polyhexamethylene polyamine having the formula

$$H_2N[(CH_2)_6NH]_n(CH_2)_6NH_2$$

wherein n is an integer of 1 to 3, and wherein the amidification reaction was accomplished by heating the components from a temperature of about 70°C. to 225°C. and the amidification product has an acid value of about 70 to 120,

B. washing the warp with an organic solvent having a solubility parameter of about 9.1 to 13.9 selected from the group consisting of trichloroethylene, 1,1,2-trichloroethane and methylene chloride, whereby dissolving the amidification product, and removing said amidification product from the warp, and

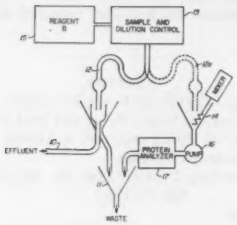
C. distilling the solvent from the amidification product.

3,841,834

AUTOMATIC PROTEIN ANALYSIS SYSTEM AND METHOD

Niranjan R. Gandhi, and Gary H. Richardson, both of Logan, Utah, assignors to Utah State University Foundation, Logan, Utah

Filed June 26, 1973, Ser. No. 373,719
Int. Cl. G01n *33/04*
U.S. Cl. 23—231 **3 Claims**



1. A method for determining the protein content of milk sample comprising the steps of:

a. sampling an effluent stream of an automatic milk butterfat analyzing system wherein said sample comprises a mixture of milk and a first reagent, said first reagent comprising ethylenedinitrilo tetraacetic acid, tetrasodium salt, sodium hydroxide, and water,

b. mixing said sample with second reagent comprising acetic acid and a wetting agent which does not interfere with the absorbancy characteristics of ultraviolet light of a wavelength of about 280 nanometers; and

c. measuring the ultraviolet light absorbance characteristic of said mixed sample.

3,841,835

MEANS FOR PROVIDING AN INFORMATION SIGNAL OF SAMPLE INTRODUCTION IN APPARATUS FOR CHEMICAL ANALYSIS

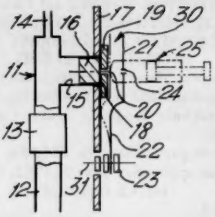
Kenichi Kishimoto, Osaka; Hiroshi Miyauchi, Kyoto; Yasuhiko Inagaki, Kyoto, and Joji Fujimoto, Kyoto, all of Japan, assignors to Yanagimoto Seisakusho Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 161,447, July 12, 1971, abandoned. This application Feb. 23, 1972, Ser. No. 228,581
Claims priority, application Japan, Feb. 24, 1971, 46-11624; July 15, 1970, 45-61881; Mar. 31, 1971, 46-23853
Int. Cl. G01n *1/14*; B65b *1/04*
U.S. Cl. 23—253 R **12 Claims**

1. Apparatus for providing a signal indicating introduction of a sample to be analyzed into a sample introduction section of a sample analyzing system by a syringe having an injection needle which punctures a plug covering the opening of the sample introduction section, comprising:

a first member positioned adjacent the sample introduction opening for engagement and movement with the syringe when a sample is injected into the sample introduction section;

a second member engageable by said first movable member; and



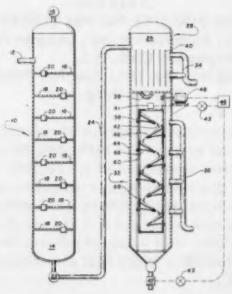
means for producing an output signal in response to engagement of said second member by said first member.

3,841,836

APPARATUS FOR THE PRODUCTION OF CONDENSATION POLYMERS

Marvin C. Lunsford, Jr., Kingsport; David T. Bowers, Chuckey; Sherwood M. Caldwell, Kingsport; Leonard P. Davis, Kingsport, and Ted L. Roach, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,556
Int. Cl. B01d *19/00*; B01j *1/00*; C08g *17/00*
U.S. Cl. 23—253 A **9 Claims**



1. Apparatus for the production of condensation polymers having a predetermined final viscosity comprising

a. housing means having a polymer inlet and polymer outlet,

b. variable slope means for conducting a flow of polymer in a descending path from said polymer inlet to said polymer outlet, said variable means being adjustably supported within said housing means,

c. adjustment means operably connected to said variable slope means for adjusting the initial slope thereof,

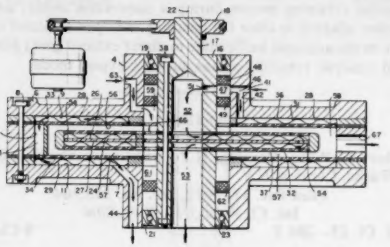
d. polymer sensing means operably connected to said adjustment means for continuously sensing the viscosity of the polymer and adjusting the slope of said variable slope means in response thereto so as to maintain the residence time of the polymer flowing over said variable slope means for a period sufficiently long to prepare a polyester having a predetermined final viscosity; and

e. weight responsive means operably connected to said variable slope means for continuously sensing the weight of the polymer on said variable slope means and increasing the slope thereof whenever the weight of the polymer thereon exceeds a predetermined weight and decreasing the slope thereof whenever the weight of the polymer thereon falls below a predetermined weight.

3,841,837
OXYGENATOR

Sotiris Kitrilakis, and Thomas C. Robinson, both of Berkeley, Calif., assignors to Tecna Corporation, Emeryville, Calif.

Filed Oct. 5, 1972, Ser. No. 295,175
Int. Cl. A61m 1/03
U.S. Cl. 23—258.5 3 Claims

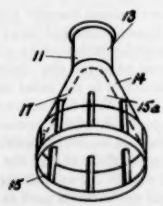


1. An oxygenator comprising a stator having a disc-like cavity defined by a pair of side walls and a peripheral wall; a shaft; means for journalling said shaft in said stator; a rotor on said shaft and having a rotor wall disposed in said cavity; first support means permeable to gas in substantially all directions and extending from said side walls; first membranes permeable to gas but not readily permeable to liquid in contact therewith and disposed against said support means on the side thereof opposite said side walls; second support means permeable to gas in substantially all directions and extending from said rotor wall on the side thereof toward said side wall; second membranes permeable to gas but not readily permeable to liquid in contact therewith and disposed against said second support means on the side thereof opposite said rotor wall and spaced from said first membranes to leave a passage therebetween extending from adjacent the center of said cavity to the periphery thereof; means in said stator for conducting gas into said stator, through said first support means and out of said stator; means in said rotor for conducting gas into said rotor, through said second support means and out of said rotor; inlet means in said stator for conducting liquid into said cavity and into said passage adjacent the center of said rotor; and outlet means in said peripheral wall for conducting liquid out of said cavity.

3,841,838
CENTRIFUGE CUPS FOR AUTOMATIC CHEMICAL ANALYZER

Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corp., Santa Ana, Calif.

Continuation-in-part of Ser. Nos. 845,992, July 30, 1969, Pat. No. 3,722,790, and Ser. No. 253,167, May 15, 1972,. This application Nov. 3, 1972, Ser. No. 303,500
Int. Cl. B01l 3/00
U.S. Cl. 23—259 19 Claims

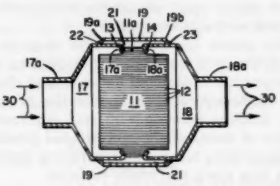


1. In a container for use in an automated centrifuge arrangement whereby said container may be rotated on its substantially vertical axis so as to separate materials of different density, said container having a flanged neck forming a cylinder around said vertical axis, suitable for insertion of a stopper, an upper outer wall continuous with sajd neck at the lower end of the cylinder, said upper wall making an angle greater than 90 degrees but less than 180 degrees with said cylinder, said upper wall having a section meeting and continuous with a lower inner wall so that said container is formed with a side chamber between portions of said outer and inner wall at least partially surrounding said central axis, the improvement therein comprising, a plurality of baffles attached to one wall of said outer or inner walls, said baffles being disposed at intervals in said side chamber and extending partially between the walls of said side chamber so as to permit passage of and even distribution of the sediment on centrifuging but to prevent remixing of the sediment on decelerating.

3,841,839
CATALYTIC CONVERTER

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,462
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 F 4 Claims



1. A catalytic converter comprising, in combination;

A. a partly cylindrical core member of a refractory ceramic material having a myriad of passages extending therethrough from one planar end thereof to the other, such core member including an annular collar portion peripherally surrounding the core member with the brims of the ends of such collar portion being evenly beveled or chamfered and the walls of said passages having an oxidation catalyst deposited thereon;

B. first and second oppositely disposed and generally funnel shaped metallic casings whose large open ends have a diameter somewhat greater than the maximum diameter of said core member and which include radially inwardly extending flange portions which taper at angles conforming to said beveled brims of the ends of said collar portion of the core member, said large open ends of said first and second casings surrounding and in firm contact with the beveled brims of the first and second ends respectively of the collar portion of the core member;

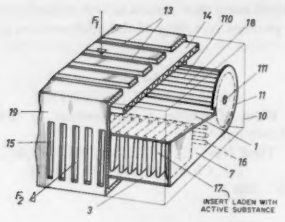
C. a generally cylindrical casing surrounding and completely enclosing said large open ends of said funnel shaped casings and said collar portion of said core member with an annular space provided between the cylindrical casing and the funnel shaped casings and the core member, the ends of the cylindrical casing bent radially inwardly to contact the large ends of the funnel shaped casings; and

D. means joining the ends of said cylindrical casing to the large ends of said funnel shaped casings to maintain said cylindrical casing under tension and the funnel shaped casings and the collar portion of the core member under compression, the smaller ends of the funnel shaped casings forming inlet and outlet conduits for the exhaust gases from an internal combustion engine.

3,841,840
ELECTROSTATIC FILTER

Eckhard Hundhausen, Margarethenstrasse 21, 6242 Schlonberg Taunus; Claus Christian Cobarg, Rossertstrasse 28, 6374 Steinbach Taunus, and Hans-Georg Boehm, Kellergrundweg 13, 6242 Kronberg Taunus, all of Germany

Filed July 27, 1972, Ser. No. 275,685
Claims priority, application Austria, July 28, 1971, 6576/71
Int. Cl. B03c *3/00*, *3/01*, *9/00*
U.S. Cl. 23—284 8 Claims

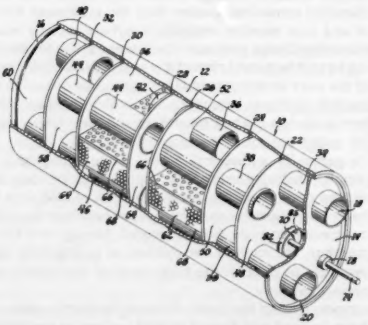


1. An electrostatic filter comprising:
a pair of spaced-apart electrodes with confronting faces energized with opposite polarity;
circulation means for driving a flow of air to be purified through the space between said electrodes; and
a foil-shaped insert disposed between said electrodes with major surfaces parallel to the direction of said flow, said major surfaces defining with said confronting faces a plurality of substantially unobstructed parallel channels, said insert being laden with a purifying agent exposed to the air flow along said major surfaces.

3,841,841
CATALYTIC CONVERTER MUFFLER ASSEMBLY

Ashod Torosian, West Bloomfield, and John B. Giacoletti, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,516
Int. Cl. B01j *9/02*; F01n *3/00*, *3/14*
U.S. Cl. 23—288 F 4 Claims

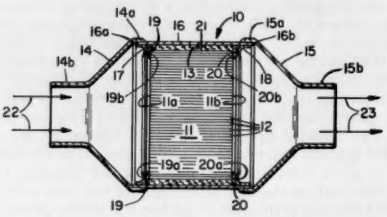


1. An exhaust muffler comprising: a substantially hollow muffler shell having an exhaust gas inlet and an exhaust gas outlet; a catalyst retaining means comprising apertured bottom and top plates within said shell having a catalyst therein; a plurality of spaced apart parallel baffle plates also within said shell forming acoustic chambers, a plurality of conduit members between the baffle plates that are adapted to direct exhaust gases from said inlet through said baffle plates and acoustic chambers through said catalyst in said catalyst retaining means to the outlet; and a bypass valve positioned between adjacent baffle plates; whereby said bypass valve is adapted to open an aperture in one baffle plate to direct gas to said catalyst retaining means during a conversion mode, and is further adapted to close the aperture and open a second aperture in the adjacent baffle plate to direct exhaust gases around said catalytic retaining means during a bypass mode.

3,841,842
CATALYTIC CONVERTER

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,764
Int. Cl. F01n *3/14*; B01j *9/04*
U.S. Cl. 23—288 F 9 Claims



1. A catalytic converter comprising in combination; a cylindrical core member of a refractory ceramic material, a cylindrical metallic casing surrounding the outer periphery of said core member and greater in length than such member with an annular space provided between the inner peripheral surface of the casing and said outer periphery of the core member, and first and second oppositely disposed and generally funnel shaped metallic casings, such casings having large open ends attached to the ends of said cylindrical casing and smaller open ends forming inlet and outlet conduits for the exhaust gases from an internal combustion engine; means for supporting said core member within said cylindrical casing to compensate for differences in thermal expansion of the core member and said casings when exhaust gases flow from an internal combustion engine through the converter from said inlet conduit to said outlet conduit, said means comprising;

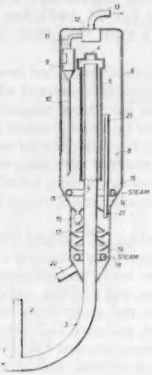
A. a pair of first and second flat metallic rings corresponding in outer periphery to said inner peripheral surface of said cylindrical casing and snugly and slidably disposed in first and second ends thereof with a first flat surface of said first and second rings in contact with outer annular portions of first and second ends, respectively, of said core member;

B. a pair of first and second bimetal annuluses each comprising a pair of joined inner and outer metal parts having substantially dissimilar temperature coefficients of thermal expansion and each annulus including a cylindrical portion fixedly attached to the inner surface of said cylindrical casing adjacent first and second ends thereof, respectively, and portions which extend radially inwardly towards the centers of each respective annulus to firmly contact the second surface of said flat ring in the respectively associated end of the cylindrical casing, said metal part which is said outer metal part of each said annulus having a lower temperature coefficient of thermal expansion than said metal part which is said inner metal part of each said annulus.

3,841,843
APPARATUS FOR FLUIDIZED CATALYTIC CRACKING OF HYDROCARBONS

Dale Williams, and Dorrance P. Bunn, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,769
Int. Cl. B01j *9/16*; F16l *55/00*, *59/16*
U.S. Cl. 23—288 S 2 Claims



1. In a fluidized catalytic cracking reactor vessel comprising an enclosed, vertically elongated shell defining a lower zone for fluidized catalyst and an upper zone for separation and recovery of hydrocarbon vapors, an elongated riser conduit extending vertically into the lower portion of said reactor vessel forming an upwardly directed confined cracking path, an elongated downcomer conduit, open at each end, vertically disposed around the upper portion of said elongated riser conduit forming a downwardly directed annular cracking path communicating at the lower end with the interior of said reactor vessel, and flow reversal means communicating with the interior of said riser conduit and the annular space between said riser conduit and said downcomer conduit at the upper end thereof; improved flow reversal means which comprise:

a. a vertical cylinder body enclosing the upper end of said riser conduit and the upper end of said downcomer conduit;

b. a bottom ring, wherein the outer edge of said ring is attached to the lower edge of said vertical cylinder body and the inner edge of said ring is attached to the upper edge of said downcomer conduit, thereby spacing the wall of said vertical cylinder body from the wall of said downcomer conduit and forming a vapor tight seal therebetween;

c. a cover plate attached to the upper end of said vertical cylinder body, having an opening of substantially the same diameter as the riser conduit and concentric therewith;

d. a hollow cylindrical member surrounding the opening in said cover plate; and

e. a top plate covering the upper end of said hollow cylindrical member, wherein the plane surface of said top plate is perpendicular to the vertical axis of said riser conduit.

3,841,844
SYSTEM FOR REACTING ALKYLAROMATICS WITH ALKADIENES

Richard E. Mitchell, Boothwyn, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

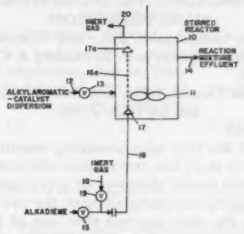
Filed Sept. 7, 1972, Ser. No. 287,138
Int. Cl. B01j *9/08*, *4/00*
U.S. Cl. 23—288 E 1 Claim

1. A system for reacting liquid alkylaromatic hydrocarbon with a conjugated alkadiene in the presence of dispersed catalyst to produce mainly mono-adduct product, which comprises:

a. reactor means provided with means for stirring a liquid reaction mixture therein;

b. means for introducing alkylaromatic hydrocarbon containing dispersed catalyst to said reactor means;

c. a supply line for introducing conjugated alkadiene to the reactor, said supply line extending into the reactor means



with its outlet end adjustably movable from a position within the liquid reaction mixture therein to a position above the liquid mixture;

d. an outlet line for removing reaction mixture from the reactor means;

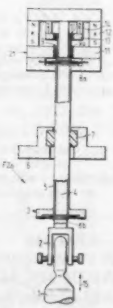
e. means for supplying an inert gas in place of conjugated alkadiene to said supply line;

f. and vent means for removing inert gas from the reactor means.

3,841,845
FOR USING SONIC VIBRATIONS TO PRODUCE A RADIALLY UNIFORM RESISTANCE CHARACTERISTIC IN A SEMICONDUCTOR CRYSTAL

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 24, 1972, Ser. No. 283,320
Claims priority, application Germany, Aug. 27, 1971, 2143112
Int. Cl. B01j *17/00*
U.S. Cl. 23—301 SP 11 Claims



1. In a method of producing a monocrystal semiconductor rod having a substantially uniform radial resistance characteristic by the crucible-free zone melting process which includes supporting a stock semiconductor rod at its ends by a pair of substantially vertically aligned opposing rod mounting means, generating a melt zone on an annular section of said rod by an annular induction heating means surrounding said rod, and

moving said melt zone along the length of said rod from one end thereof to the other end, the improvement comprising:

generating sonic vibrations in a longitudinal direction substantially parallel to the axis of said rod by a magnetic coil activated with an alternating current; and

transmitting said axially directed sonic vibrations to at least one of said pair of rod mounting means.

3,841,846
LIQUID PHASE SINTERED MOLYBDENUM BASE ALLOYS HAVING ADDITIVES AND SHAPING MEMBERS MADE THEREFROM

Earl I. Larsen, Indianapolis, Ind., and Richard H. Krock, Weston, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 25, 1970, Ser. No. 109,121
Int. Cl. C22c *27/00*
U.S. Cl. 29—182 **19 Claims**

1. A sintered Mo base alloy consisting essentially of about 80 wt. percent or more Mo, two metallic elements forming an alloy which when molten dissolves an appreciable amount of Mo, and a property improving element, the two metallic elements forming the alloy selected from one of the following groups consisting of (a) Mn and an additional element selected from the group consisting of Ni, Fe, Cu, Ti, Zr, U, Si and Co, (b) V and an additional element selected from the group consisting of Ni, Fe, Co, Mn and Cr, (c) Si and an additional element selected from the group consisting of Ni, Fe, Co, Cu and V, (d) B and an additional element selected from the group consisting of Ni, Fe, Co, Cr, V, Nb and/or Ta, (e) Ni and an additional element selected from the group consisting of Fe, Co, Cr and Cu, and (f) Fe and Co, and the property improving element being different from the two metallic elements, the property improving element selected from the group consisting of up to 10 wt. percent Re, up to 5 wt. percent Mn, Ti, Zr, Hf, Ta and Nb, and up to 2 wt. percent Si, and B.

3,841,847
CHROMIUM ALLOYS CONTAINING Y_2O_3 AND ALUMINUM OR SILICON OR BOTH

Rodney Charles Jones, and Alan Abraham Hershman, both of London, England, assignors to The British Non-Ferrous Metals Research Association, London, England

Filed Sept. 15, 1972, Ser. No. 289,232
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.5 **3 Claims**

1. A chromium-based alloy consisting of (apart from impurities):

chromium	at least 70% by weight
yttrium	up to 18% by weight
Y_2O_3	up to 18% by weight
aluminium	up to 5% by weight
silicon	up to 8% by weight

provided that:

yttrium + Y_2O_3 at least 0.01% by weight
aluminium + silicon at least 0.01% by weight
yttrium + Y_2O_3 + aluminum + silicon not more than 30% by weight.

3,841,848
HARD WATCH CASE COMPRISING TIN, T, AND AT LEAST ONE OF MN, AL AND V

Masami Kasai, and Motoki Kishida, both of Nagano, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 110,959, Jan. 29, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,661
Claims priority, application Japan, Jan. 30, 1970, 45-7675
Int. Cl. C22c *1/04;* G04b *37/00;* C22c *1/05, 29/00*
U.S. Cl. 29—182.5 **10 Claims**

1. A watch case resistant to mechanical defacement and corrosion, having an external pressed and sintered component comprising TiN, Ti and at least one binder metal selected from the group consisting of Mn, Al and V, the percentage by weight of TiN being from 50 to 95, of Mn being 0.5 to 10, of Al being 0.1 to 8 and of V being 0.1 to 10 with Ti constituting the remainder.

3,841,849
PROCESS OF MANUFACTURING FUEL BRIQUETTES

Franz H. Beckmann, Stettiner Strasse 10, Alsdorf, Germany

Continuation of Ser. No. 75,645, Sept. 25, 1970, abandoned. This application Jan. 26, 1973, Ser. No. 326,978
Int. Cl. C10l *5/00, 5/10, 5/40*
U.S. Cl. 44—10 H **7 Claims**

1. A process for manufacturing fuel briquettes from a mixture of (a) solid particles of a material which, if compressed alone in said process, would not briquette because of their relative inertness to the heat and pressure used in the process, and (b) particles of an operative binder material for the solid particles, the binder material consisting essentially of caking coal containing naturally occurring volatiles, including those which vaporize at temperatures in excess of 430°C., said process comprising:

compressing an about 73:27 percent mixture of at least one material (a) chosen from the group consisting of anthracite, low-volatile coal, low-temperature carbonization coke, coke breeze, and iron ore, and at least one material (b) chosen from the group consisting of caking coal, high-volatile coal, gas coal, and open burning coal, into briquettes at a temperature of 430°–540°C. tempering the hot briquettes thus formed, without raising the temperature thereof;

the minimum duration of the tempering in minutes (t) and the mean tempering temperature in °C (T) being determined in accordance with the relation

$t = 2{,}000/(T - 390)$.

3,841,850
HYDROCARBON OIL CONTAINING ETHYLENE COPOLYMER POUR DEPRESSANT

Colin Aaron, Wantage, England; Alan Harold Edwards, Brussels, Belgium, and Keith Campbell Tessier, Scotch Plains, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 779,592, Nov. 27, 1968, abandoned. This application Oct. 16, 1972, Ser. No. 297,792
Claims priority, application Great Britain, Nov. 30, 1967, 54631/67
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 **9 Claims**

1. A hydrocarbon-containing composition comprising a major proportion by weight of oil selected from the group consisting of crude oil and fuel oil of which at least 60 percent by weight boils above 500°F. at atmospheric pressure, said fuel oil being selected from the group consisting of a residua-containing fuel, and a flash distillate fuel, and 0.0005 to 0.5 percent by weight of an oil-soluble copolymer having a number average molecular weight in the range of about 4,000 to about 20,000 and having pour point depressing ability in said oil, said copolymer comprising a lower alkyl ester of an unsaturated mono- or dicarboxylic acid and about 86 to about 97 mol percent ethylene.

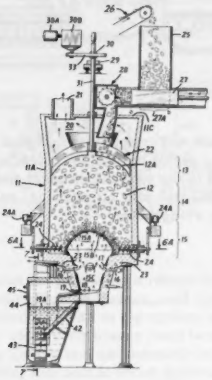
3,841,851
PROCESS AND APPARATUS FOR THE GASIFICATION OF ORGANIC MATTER

Elmer Robert Kaiser, 7 Kaateskill Pl., Scarsdale, N.Y. 10583

Filed Feb. 12, 1974, Ser. No. 441,762
Int. Cl. C10j *3/00*
U.S. Cl. 48—111 **26 Claims**

1. In a process for converting solid fuel to useful gaseous products by providing a substantially vertical reactor containing a deep bed of prepared solid fuel, and feeding a solid fuel mixture containing organic matter in a manner to minimize

the infiltration of air or exfiltration of gas and deliver the fuel in a loose condition into the upper portion of said reactor, the improvement which comprises feeding oxygen-enriched gas centrally into the bottom of said fuel bed and upwardly through said bed thereby to maintain combustion in said fuel bed and to form a central cavity maintained at combustion temperatures in the fuel bed and to form combustible product gases which flow from the top of said bed, forcing radially inwardly the lower portions of the bed by external mechanical



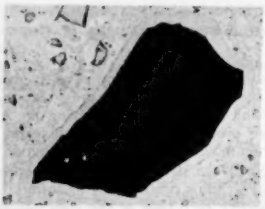
means thereby to control and limit the size of said cavity, combusting the carbonized fuel at and near the surface of said cavity, thereby producing hot gases that flow upwardly and outwardly through passages between the fuel particles thus imparting heat to the particles and thermally decomposing the organic matter into gases and vapors, and contouring the top of the bed by mechanical means to a generally dome shape thereby to provide for more uniform flow of gases upwardly through said bed.

3,841,852

ABRADERS, ABRASIVE PARTICLES AND METHODS FOR PRODUCING SAME

Arthur G. Wilder, and Harold C. Bridwell, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Jan. 24, 1972, Ser. No. 220,351
Int. Cl. B24d *3/06*
U.S. Cl. 51—295 **24 Claims**



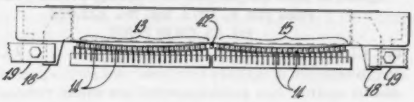
1. A shaped abrader comprising a continuous phase of a metal matrix, primary abrasive particles and secondary abrasive particles, said primary and secondary abrasive particles being of different densities, the primary abrasive particles having a hardness more than 2,000 kg/mm², and said secondary abrasive particles having a hardness of above about 1,250 kg/mm² and less than the hardness of the primary abrasive particles, the particles of lower density, being encapsulated in a metal envelope, the densities of said encapsulated particles of lower density being greater than the density of the unencapsulated particles of lower density, said encapsulated particles having a density more than 30 percent of the density of highest density, and said particles being substantially uniformly distributed in said metal matrix.

3,841,853

APPARATUS FOR PRODUCTION OF THERMOPLASTIC MATERIALS

James M. Higginbotham, Newark, Ohio, and William G. Wardlaw, Sr., Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 5, 1972, Ser. No. 286,503
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 **3 Claims**



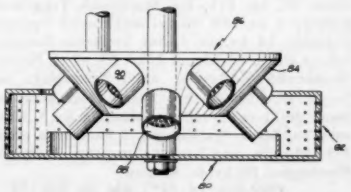
1. Apparatus for producing filaments of glass, comprising:
a container for molten glass having rows of orifices formed in an elongated wall from which streams of molten glass may flow, the orificed wall tending to develop regions at its ends of greater temperature that promotes discharge of hotter streams from orifices in these regions during filament formation;
means for attenuating the streams from the orifices to form fine filaments; and
side-by-side thin longitudinal shield members spaced from the orificed wall and aligned with the rows of orifices such that the shield members will subdivide the total number of streams into smaller groups, shield members adjacent the hotter stream emitting orifices in the end regions of the orificed wall being located in closer spaced relationship with such wall than the other shield members outside the end regions to even out thermal conditions and thereby promote streams having substantially the same filament forming temperature characteristics in all regions of the orificed wall during filament attenuation.

3,841,854

APPARATUS FOR HEATING A GLASS FIBER FORMING SPINNER

Douglas Marion Periat, Toledo, and David Lawrence Oster, Whitehouse, both of Ohio, assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Nov. 24, 1972, Ser. No. 309,548
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 **4 Claims**



1. An apparatus for heating a spinner in a fiber producing process wherein molten glass is delivered to the interior of the

spinner at a location on a bottom disc of the spinner spaced outward from the center of the spinner and the molten glass flows out through orifices in a peripheral wall of the spinner to form fibers comprising:

a generally arcuate manifold which extends for at least 270° and is discontinuous to permit the delivery of the molten glass to the spinner,

a plurality of burners carried by the manifold, the burners being directed radially outward and downward from the manifold toward an outer portion of the spinner and having centerlines extending at an angle of about 45° with respect to the vertical whereby both the bottom disc and the peripheral wall of the spinner are heated, and

support means for supporting the manifold above the disc of the spinner.

3,841,855

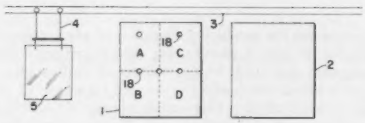
GLASS TEMPERING CONTROL SYSTEM

William S. Montgomery, Jr., Norristown; William E. Marceau, Horsham, and William G. Bates, Sellersville, all of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Jan. 8, 1973, Ser. No. 322,028

Int. Cl. C03b *27/00*

U.S. Cl. 65—29 **9 Claims**



1. Means to heat a sheet of glass or the like including,

a furnace to direct heat toward opposite sides of said glass, said furnace being divided into zones each extending over a portion of the area of the glass and heating means for directing heat in each zone toward opposite sides of a portion,

individual means to measure directly the temperature of each zone,

means actuated in response to said measurements to adjust individually the heating means of each zone toward a common set point temperature,

means responsive to the decrease in temperature of all of said zones a predetermined amount below said set point operative to adjust said set point downwardly, and

means to discontinue said adjustment when the temperature of any zone is less than said predetermined amount below said set point.

3,841,856

METHOD OF PRODUCTION OF WHITE DIVITRIFIED GLASS MATERIAL

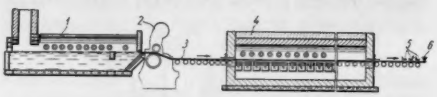
Konstantin Timofeevich Bondarev, Nizhnyaya Pervomaiskaya ulitsa, 33, kv. 171; Isai Davidovich Tykachinsky, ulitsa Fadeeva, 6, kv. 140; Nikolai Mikhailovich Pavlushkin, ulitsa Gotvalda, 14, kv. 44; Galina Vasilievna Kataeva, 11 Parkovaya ulitsa, 48, korpus 1, kv. 53, all of, Moscow; Viktor Stepanovich Kozlovsky, ulitsa Teatralnaya, 6a, kv. 22, Dolgoprudny Moskovskoi Oblasti; Mark Bentsionovich Romanovsky, 1-ya Pryadilnaya ulitsa, 7a, kv. 5, Moscow; Varvara Vasilievna Pyatnitskaya, 5 Parkovaya ulitsa, 10, kv. 115, Moscow, and Svetlana Ivanovna Rud, ulitsa Pavla Korchagina, 10, kv. 6., Moscow

Filed Nov. 14, 1972, Ser. No. 306,556

Int. Cl. C03b *29/00, 18/00*

U.S. Cl. 65—33 **3 Claims**

1. A method for the production of white devitrified glass material comprising the steps of melting natural batch materials of sand, limestone, chalk, clay and broken glass and forming a glass melt having a composition of SiO_2, CaO, MgO, Al_2O_3 and Na_2O, heating said melt to temperatures from 1,410°C. to 1,450°C. and opacifying said melt by phase demixing, forming a glass band of said melt, heating said glass band to a temperature from 1,050°C. to 1,080°C. at a rate of 5°C.



to 10°C. a minute and crystallizing said glass band, curing said glass band for a period of time not exceeding 1 hour, cooling said glass band to the vitrification point and forming a white devitrified glass, and said crystallizing, curing and cooling taking place in a single stage.

3,841,857

METHOD FOR THE CONTINUOUS PRODUCTION OF GLASS(ESPECIALLY GLASS POSSESSING A SUBSTANTIALLY BAND-SHAPED CROSS-SECTIONAL CONFIGURATION

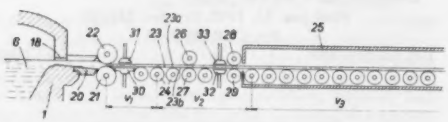
Siegfried Harcuba, Saarbrucken, Germany, assignor to Transglas Patent- und Lizenzverwertungs AG, Chur, Switzerland

Continuation of Ser. No. 75,943, Sept. 28, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,477

Claims priority, application Switzerland, Aug. 3, 1970, 14935/69

Int. Cl. C03b *17/00*

U.S. Cl. 65—94 **26 Claims**

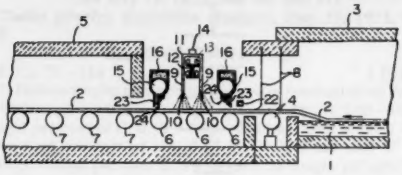


1. A method for the production of glass, especially glass possessing a substantially band-like cross-sectional configuration, comprising the steps of: conveying the glass along a predetermined production path, controlling the viscosity of the glass during movement along the production path so that it amounts to between 10^3 and 10^{10} poise, exerting a pressure upon the glass which is substantially uniform at its front and back faces, during such time as the glass viscosity is in the range between 10^3 and 10^{10} poise, by impacting the glass with the same fluent pressurized medium at a pressure in the range of about 0.7 to 6 atmospheres excess pressure, stretching the glass while impacting said glass with excess pressure, and controlling the temperature of the pressurized medium such that it possesses approximately the same temperature as the glass at the location where it is impacted by the pressurized medium.

3,841,858
APPARATUS FOR PRODUCING A RIBBON-LIKE GLASS HAVING A METAL OXIDE COATING FORMED THEREON

Naotomo Akashi, and Katsuji Fujimoto, both of Kyoto, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 12, 1973, Ser. No. 340,107
Claims priority, application Japan, Mar. 17, 1972, 47-27837
Int. Cl. C03c 17/10
U.S. Cl. 65—181 4 Claims



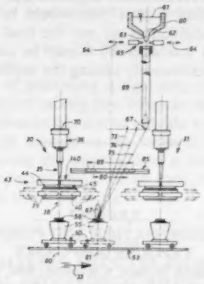
1. In an apparatus for producing a ribbon-like glass having a metal oxide coating formed thereon, said apparatus having a spray gun provided opposite to the surface of a ribbon-like glass at a position which is between a point between a ribbon-like glass forming device and an annealing lehr and a point within said annealing lehr and at which position the temperature of the glass ribbon opposed to the spray gun is at least 400°C., said spray gun being adapted to move in the widthwise direction of the glass ribbon, means for supplying a solution of a metal compound to said spray gun, and means for spraying out said solution of metal compound from said spray gun, the improvement comprising a pair of exhaust pipes disposed on both sides of the path of movement of said spray gun, the lower portions of said exhaust pipes having suction openings therein, a discharge device coupled to said exhaust pipes for sucking exhaust gases resulting from the sprayed metal compound solution from the neighborhood of the glass surface through said suction holes, and a plurality of walls depending from said exhaust pipe to near the surface of the glass ribbon and disposed parallel to the axial line of the exhaust pipe and defining fine gaps therebetween extending to said suction openings, the innermost wall situated nearest to the spray gun being shortest, and the walls becoming progressively longer the more remote they are from the spray gun.

3,841,859
APPARATUS FOR FEEDING GOBS OF MOLTEN VITREOUS OR PLASTIC MATERIAL INTO MOLDS OF A MACHINE FOR FORMING BOTTLES OR SIMILAR CONTAINERS

Kurt Becker, Obernkirchen, and Hans-Georg Seidel, Rinteln, both of Germany, assignors to Hermann Heye, Obernkirchen, Germany

Division of Ser. No. 163,171, July 16, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,194
Claims priority, application Germany, July 20, 1970, 2035926
Int. Cl. C03b 5/30
U.S. Cl. 65—207 5 Claims

1. In a machine for forming bottles or similar containers from vitreous or plastic material, a combination comprising support means rotatable about an axis and forming an endless path about said axis; at least one carriage mounted on said support means; upright mold means on said carriage; a stationary loading station at one point of said path for dropping a gob of vitreous or plastic material in vertical direction into said mold means; first drive means cooperating with said support means for continuously rotating the same at substantially uniform speed about its axis; means cooperating with said carriage and said support means for coupling said carriage to said support means for movement therewith at said uniform speed about said axis and for decoupling said carriage from said support means so that the carriage may move relative to said support means; and second drive means connected to said carriage for moving the same along said endless path relative



to said support means, when said carriage is decoupled from said support means and for maintaining said carriage stationarily for a short time at said stationary loading station while a gob is dropped from said gob feeding means into the mold means and while said first drive means continue to rotate said support means with uniform speed about said axis.

3,841,860
DENTAL ALLOY

Donald Timothy Wolf, Milford, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed July 11, 1973, Ser. No. 378,361
Int. Cl. C22c 5/00; B22f 1/00
U.S. Cl. 75—.5 R 1 Claim

1. A dental composition amalgamatable by trituration with mercury comprising a mixture of amalgamatable silver-containing alloys wherein one of said alloys contains between about 60 and 80 percent by weight of the alloy weight of silver, between about 15 and 30 percent by weight copper and between about 2 and 15 percent by weight tin and a second alloy comprises between 68 and 72 percent by weight of the alloy of silver, between about 22 and 28 percent by weight of tin and between about 1 and 8 percent by weight of copper.

3,841,861
ADDITION AGENT FOR DEOXIDIZING AND RECARBURIZING DEGASSED STEEL AND METHOD EMPLOYING THE SAME

Robert S. Miltenberger, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 816,418, April 15, 1969, Pat. No. 3,702,243. This application Nov. 1, 1972, Ser. No. 302,832
Int. Cl. C21c 7/06; B22d 11/00
U.S. Cl. 75—53 11 Claims

1. A method of continuously casting steel comprising the steps of preparing a melt of steel by a basic oxygen process, subjecting the melt of steel to a reduced pressure to produce molten partially deoxidized degassed steel having carbon and oxygen contents which are substantially lower than were present in the melt initially, and further deoxidizing and recarburizing the melt of steel by adding thereto an addition agent consisting essentially of a plurality of briquettes, each of the said plurality of briquettes consisting essentially of (1) carbon, (2) at least one substance which reacts exothermically with oxygen contained in the molten steel selected from the group consisting of aluminum and silicon, (3) manganese and (4) iron, the said plurality of briquettes having a size of about

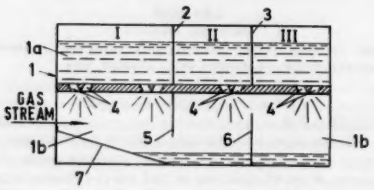
0.25–3 inches and having a ratio by weight of carbon to the said exothermic substance between about 1:4 and 3:2, the manganese and iron being present in the said plurality of briquettes in a combined amount of at least 25 percent of the total weight of carbon and the said exothermic substance and in an amount to increase the specific gravity sufficiently whereby the briquettes sink into the said melt of steel, the melt of deoxidized and recarburized degassed steel having a carbon content substantially higher than would be present in the absence of the addition agent and the final oxygen content being sufficiently low whereby it may be continuously cast, and thereafter continuously casting the melt of steel.

3,841,862

COOLING, CONDENSATION AND PURIFICATION OF VAPOURS AND GASES

Frank George Simon Benatt, Clevedon, and Michael William Gammon, Bristol, both of England, assignors to Metallurical Processes Limited, Nassau, Bahamas and ISC Smelting Limited, London, England

Filed Nov. 29, 1972, Ser. No. 310,554
Int. Cl. C22b *17/00, 19/04*
U.S. Cl. 75—71 **6 Claims**



1. A method of condensing a vapour selected from the group consisting of zinc vapour and cadmium vapour, comprising: producing a spray of molten lead droplets by causing at least two continuous streams of molten lead to mutually impinge on each other, and passing the vapour through the lead spray thus produced.

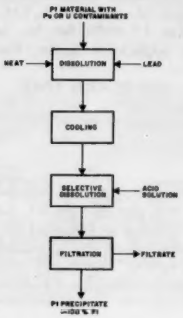
3,841,863

PURIFICATION OF PLATINUM

Carroll E. Caldwell, Louisville, and Ann C. Ficklin, Evergreen, both of Colo., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 12, 1973, Ser. No. 350,559
Int. Cl. C22b *11/00*
U.S. Cl. 75—83 **6 Claims**

1. A method for separating platinum from a material containing platinum and contaminant taken from the group consisting of plutonium, uranium, and combinations thereof, comprising contacting said material with lead at a weight proportion of from about 5 to 10 times the platinum weight and heating the same to from about 900°C. to about 1,200°C. for from about one hour to about two hours to effect dissolution and fusion of said material and said lead, cooling the same to solidification, contacting the solidified product with a from about 3.1 normal to about 7.8 normal nitric acid solution to dissolve said lead and said contaminant, and thereafter separating undissolved platinum from said acid solution and said dissolved contaminant.



3,841,864

METHOD FOR PRODUCING NICKEL BY SEGREGATION OF NICKEL OXIDE ORES

Maurice Rey, and Victor Formanek, both of Paris, France, assignors to Le Nickel, and Societe Miniere et Metallurgique de Penarroya, both of Paris, France

Filed Oct. 25, 1972, Ser. No. 300,491
Claims priority, application France, Nov. 3, 1971, 71.39335
Int. Cl. C22b *23/04, 23/00*
U.S. Cl. 75—101 R **7 Claims**

1. In a method for producing nickel by segregation of a nickel oxide ore by means of a carbonaceous reducing agent and of calcium chloride, the improvement which comprises the different successive following steps:

a. leaching of the segregated ore with water;
b. treatment of the solution resulting from step (a) for precipitating the nickel values contained therein;
c. washing of the gases produced during the segregation by means of the solution resulting from step (b);
d. neutralization of the solution resulting from step (c) by means of a basic calcium compound;
e. evaporation of the solution resulting from step (d), the calcium chloride thus obtained being used for segregating fresh amounts of said nickel oxide ore.

3,841,865

METHOD FOR PRECIPITATING COPPER

Kris S. Krish, Gibsonia, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1972, Ser. No. 286,451
Int. Cl. C22b *3/00*
U.S. Cl. 75—109 **7 Claims**

1. A method of precipitating copper from pregnant solutions thereof onto iron mini-pellet precipitants, in a treatment vessel having an upper end and a lower inverted cone portion, which method comprises:

a. constantly adding an initial mixture of pregnant copper solution and iron mini-pellets into the treatment vessel at an entry spaced from the inverted cone portion;
b. dynamically suspending the pellets and copper from the pregnant solution in the treatment vessel to permit precipitation of copper on the pellets;
c. constantly drawing off a resulting mixture of solution and pellets from the inverted cone portion of the treatment vessel, and recirculating said resulting mixture to the treatment vessel at a position intermediate the entry for

the initial mixture and the upper end of the treatment vessel; and

d. removing precipitated copper and spent solution from the upper end of the treatment vessel.

3,841,866

HIGH-STRENGTH ATMOSPHERE CORROSION RESISTANT PLATE STEEL

Henrik Giflo; Sandor Enekes; Pal Zambo, and Jozsef Vamosi, all of Miskolc, Hungary, assignors to Lenin Kohaszati Muvek, Miskolc-Diosgyorvasgyar, Hungary

Filed May 16, 1973, Ser. No. 360,912

Claims priority, application Hungary, May 23, 1972, LE 656

Int. Cl. C22c *37/10, 39/54*

U.S. Cl. 75—124 **1 Claim**

1. High-strength, atmosphere corrosion resistant plate steel weldable under whatever conditions, consisting of 0.03 – 0.15 weight per cent of C, 0.50 – 1.50 weight per cent of Ni, 1.0 – 1.9 weight per cent of Mn, 0.05–1.0 weight per cent of Si, 1.0–3.0 weight per cent of Cu, 0.10–0.20 weight per cent of Al, 0.01–0.30 weight per cent of Nb, 0.01–0.04 weight per cent of N, 0.05–0.50 weight per cent of Pb, 0.01–0.20 weight per cent of Cd, balance essentially iron.

3,841,867

ALLOYING STEELS

Emrys Davies, Deganwy, and John Roy Rippon, Sheffield, both of England, assignors to British Steel Corportion, London, England

Continuation-in-part of Ser. No. 80,608, Oct. 14, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,731

Claims priority, application Great Britain, Oct. 15, 1969, 50610/69

Int. Cl. C22c *33/00*

U.S. Cl. 75—129 **14 Claims**

1. A method of adding an alloying addition to a particular ferrous metal, the method comprising the steps of heating the ferrous metal in a furnace, tapping the ferrous metal from the furnace into a primary ladle at a temperature substantially above that at which it is customarily tapped from the furnace for teeming into ingot moulds, teeming the ferrous metal from the primary ladle into the secondary ladle, adding the alloying addition during said teeming into the secondary ladle whilst removing any toxic fumes generated by the alloying addition, the teeming temperature of the ferrous metal being sufficiently high to ensure solution of said alloying addition, holding the ferrous metal in the secondary ladle until the temperature of the ferrous metal is approximately equal to the customary teeming temperature for said particular ferrous metal, and teeming the ferrous metal into moulds.

3,841,868

NICKEL ALLOYS

Ronald P. Dudek, Elmwood Park; Peter Kosmos, Alsip, and John A. Tesk, Woodridge, all of Ill., assignors to Howmedica, Chicago, Ill.

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,594

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **5 Claims**

1. A corrosion resistant, hot workable and hardenable precision casting alloy consisting essentially, by weight,

Chromium	15.0 – 25.0	percent
Molybdenum	3.0 – 6.0	do.
Tin	1.0 – 4.0	do.
Manganese	0.5 – 1.5	do.
Copper	0.5 – 5.0	do.
Silicon	1.0 – 4.0	do.
Aluminum	0.0 – 1.0	do.
Cobalt	0.0 – 1.0	do.
Carbon	0.0 – 0.2	do.
Nickel	Balance	

3,841,869

METHOD OF MAKING LIGHT-DUTY ELECTRICAL CONTACTS COMPOSED OF SILVER AND RUTHENIUM DIOXIDE

Terrence Ardern Davies, Northampton, England, assignor to Square D. Company, Park Ridge, Ill.

Division of Ser. No. 191,564, Oct. 21, 1971, Pat. No. 3,778,257. This application June 25, 1973, Ser. No. 373,053

Claims priority, application Great Britain, Oct. 21, 1970, 49960/70

Int. Cl. B22f *1/00*

U.S. Cl. 75—206 **2 Claims**

1. A method of producing a light-duty electrical contact including the steps of mixing fine, irregular silver powder with fine ruthenium dioxide powder to provide a mixture having a ruthenium dioxide content in the range 0.1 to 13.0 atomic percent; compacting the mixture into a desired shape; and heating the compacted shape in an inert atmosphere for a period of time to effect sintering of same.

3,841,870

METHOD OF MAKING ARTICLES FROM POWDERED MATERIAL REQUIRING FORMING AT HIGH TEMPERATURE

Harry J. Hamjian, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Mar. 7, 1973, Ser. No. 338,829

Int. Cl. B22f *3/14, 7/06*

U.S. Cl. 75—214 **13 Claims**

1. The method of making a densified object from metallic and inorganic nonmetallic powders and combinations thereof, comprising forming at least one rigid pattern portion with a surface thereof having a predetermined shape, forming at least one readily deformable pattern portion having a surface complementary to but larger than said predetermined shape, joining said rigid and deformable pattern portions to form a pattern defining a mold-forming cavity between them, filling said mold-forming cavity with mold-forming powdered metal selected from the group consisting of elemental powders, prealloyed metal powders and combinations thereof, compacting said mold-forming powdered metal by applying pressure substantially uniformly over substantially the entire outer surface of said pattern to form a green compact, strengthening said green compact to form a mold, filling said mold with powdered material suitable for densification by pressing at a temperature above the softening temperature of said mold, heating said mold and its contents to a temperature above the softening point of said mold, isostatically pressing said mold at a pressure high enough to exceed the deformation strength of said contents while thus heated to densify said contents and form a densified object, and then removing said mold from the densified object.

3,841,871

CUMULENE-RESIN BINDER PHOTOCONDUCTIVE ELEMENTS

Robert G. Blanchette, Mayfield Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

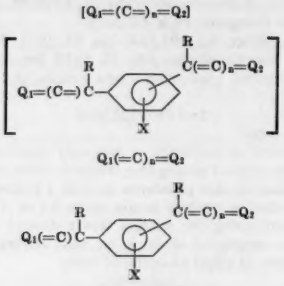
Continuation of Ser. No. 244,993, April 17, 1972, abandoned, which is a division of Ser. No. 78,628, Oct. 6, 1970, Pat. No. 3,674,473, which is a continuation-in-part of Ser. No. 771,352, Oct. 28, 1968, abandoned. This application Mar. 26, 1973, Ser. No. 345,104

Int. Cl. G03g *5/06, 13/22*

U.S. Cl. 96—1.6 **6 Claims**

1. An electrostatic imaging process for making reproductions of a graphic original on a photoelectrostatic member comprising the steps of applying a blanket of electrostatic charge to the surface of said member, exposing said charged surface to a pattern of light and shadow, producing a latent electrostatic image thereon, and developing said latent electrostatic image by the application of toner powder thereon, said photoelectrostatic member comprising a conductive base

support having a photoconductive layer applied thereon comprising an organic photoconductive compound dispersed in a resin binder, said photoconductive compound having one of the following formulas:



where x is alkyl, halogen, hydrogen or nitro, *n* is an integer from 1 through 6; Q_1 and Q_2 are selected from the group consisting of:

indene, or fluorene;
R is selected from the group consisting of lower alkyl, aryl or hydrogen; R_1 and R_2 can be aryl, substituted aryl or thienyl; and wherein Q_1 and Q_2 or R_1 and R_2 can be the same or different.

3,841,872

HYDROPHILIC-COLLOID SILVER HALIDE EMULSION HARDENED WITH A BISVINYLSULFONYL COMPOUND

Donald M. Burness, and Robert A. Silverman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,698
Int. Cl. G03c *1/30*
U.S. Cl. 96—67 **8 Claims**

1. A photographic element comprising a support and at least one radiation-sensitive hydrophilic colloid layer containing silver halide and at least one hydrophilic colloid layer hardened with a compound having two vinylsulfonyl radicals coupled through a divalent hydrocarbon radical chosen from the group consisting of:

a. an unsubstituted alkyl or an unsubstituted alkylene radical having from 1 to 6 carbon atoms,
b. —X—Y—X— in which X is an unsubstituted alkylene group having 1 or 2 carbon atoms and Y is an unsubstituted phenylene group, and
c. phenyl-substituted methylene.

3,841,873

COBALT (III) COMPLEX AMPLIFIER BATHS IN COLOR PHOTOGRAPHIC PROCESSES

Rowland George Mowrey, and Glenn Richard Wilkes, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1973, Ser. No. 361,926
Int. Cl. G03c *7/16, 7/00, 5/54, 5/32, 5/30*
U.S. Cl. 96—22 **17 Claims**

1. In a process of developing an imagewise-exposed photographic element comprising a support and at least one image dye-providing layer unit thereon which contains a light-sensitive silver halide emulsion having associated therewith a color coupler, which process includes development of the imagewise-exposed silver halide emulsion to provide an imagewise distribution of metallic silver and imbibition of a color-developing agent in said photographic element, and then contacting said photographic element with an amplifier composition which represses substantially additional net silver development, wherein said amplifier solution contains a cobalt(III) metal complex having a coordination number of 6 and said amplifier solution is maintained in contact with said photographic element under conditions which reduce said cobalt(III) to cobalt(II) and in turn oxidize said color-developing agent to provide an increase in dye density with dye produced from said coupler in the areas corresponding to the imagewise distribution of said metallic silver, the improvement comprising including in said amplifier composition a compound which is an alkali metal salt of a peracid or of ferricyanide.

3,841,874

METHOD FOR IMPROVING THE PHOTOGRAPHIC CHARACTERISTICS OF VESICULAR PHOTOGRAPHIC MATERIALS

Akio Nishino, Los Gatos, Calif., assignor to Xidex Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 124,584, March 15, 1971, abandoned. This application Mar. 29, 1973, Ser. No. 346,202
Int. Cl. G03c *5/04, 5/18*
U.S. Cl. 96—27 R **13 Claims**

1. In the method for improving the photographic characteristics of vesicular film comprising a synthetic hydrophobic vehicle substantially resistant to physical degradation by lower alkanol solvents coated and dried on a support, said vehicle being of the type adapted to serve as the vehicle for a light-sensitive material to form vesicular images, a light-sensitive material substantially uniformally dispersed in said vehicle, said light-sensitive material being decomposable to form nitrogen gas upon imagewise exposure to actinic radiation, said film being heat developable to form vesicles in the exposed areas, the improvement comprising immersing the film prior to imagewise exposure in a fluid phase alkanol having up to three carbon atoms, and thereafter equilibrating said immersed film prior to said imagewise exposure to permit release of alkanol from the film so that less than about 1 percent is retained therein, the time and temperature of said immersion and the time of said equilibration being sufficient to increase the photosensitivity of the film.

3,841,875

METHOD FOR GRADING THE SCREEN OF A COLOR TUBE

Yong S. Park, Hanover Park, and Raymond J. Pekosh, Niles, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 248,751, April 28, 1972, Pat. No. 3,762,289. This application June 4, 1973, Ser. No. 366,397
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **12 Claims**

1. In the formation of a screen for a color cathode ray tube, a method for exposing a photosensitive coating on a cathode ray tube faceplate comprising illuminating the coating with radiation actinic to said coating emanating from an effective point source through a shadow mask disposed adjacent to said coating having a predetermined pattern of apertures formed therein so as to impress on the coating a corresponding pattern of latent aperture images, said method including altering the energy distribution pattern impressed on the coating through the mask by shading said coating as a function of (i) time, (ii) the radial distance of latent images from faceplate center, and (iii) the azimuthal angle of latent images on the faceplate, such that there is defined on the faceplate coating a plurality of non-circular loci wherein each said non-circular locus consists of latent images which receive an equal time of exposure, wherein said shading comprises casting two shadow patterns on said mask which move with time across said mask in substantially orthogonal directions, each of said shadow patterns comprising first and second portions moving with time along the same axis in opposite directions.

3,841,876

METHOD FOR MAKING A PHOSPHOR SCREEN OF A CATHODE-RAY TUBE

Takeo Takemoto; Yoshifumi Tomita, both of Mobara; Ichiro Ijichi, and Sajiro Maeda, both of Toyohashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 19, 1973, Ser. No. 371,569
Claims priority, application Japan, June 30, 1972, 47-65000
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **5 Claims**

1. In a method for making a phosphor screen of cathode-ray tube comprising the steps of providing a transparent layer on that surface of a shadow mask which faces the phosphor screen within said cathode-ray tube, said shadow mask being carried by a supporting frame, said transparent layer being capable of attenuating light passing therethrough, providing a photosensitive layer on said transparent layer said photosensitive layer upon exposure to light being removable by washing with a detergent solution, exposing said photosensitive layer to light through said shadow mask and transparent layer to form light-exposed portions smaller in diameter than the shadow mask openings in said photosensitive layer, developing said photosensitive layer with a light absorbing material that adheres to the unexposed portions to form, in accordance with the shadow mask openings, a pattern of effective light-transmissible holes in said photosensitive layer thereby obtaining a shadow mask assembly, and forming a pattern of phosphors using said shadow mask assembly, the improvement comprising the fact that prior to the formation of the phosphor pattern, said shadow mask assembly is washed with a detergent solution to remove said light-exposed portions of said photosensitive layer.

3,841,877

DEVELOPMENT OF EXPOSED PHOTOGRAPHIC SILVER HALIDE ELEMENTS

Josef Frans Willems, Wilrijk; Antoon Leon Vandenberghe, Hove; Robert Joseph Pollet, Vremde; Raymond Albert Roosen, Gravenweze, and Herman Adelbert Philippaerts, Edegem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 3, 1972, Ser. No. 303,406
Claims priority, application Great Britain, Nov. 10, 1971, 52288/71
Int. Cl. G03c *7/00, 5/50, 1/06*
U.S. Cl. 96—56 **17 Claims**

1. A method of producing a photographic image, which comprises developing an image-wise exposed photographic material having a support bearing a silver halide emulsion layer, in an alkaline medium in the presence of a 2,3— or 2,5—dihydroxyphenylbenzotriazole.

3,841,878

HIGH TEMPERATURE PROCESSING OF PHOTOGRAPHIC SILVER HALIDE ELEMENTS

Robert Joseph Pollet, Vremde; Antoon Leon Vandenberghe, Hove, and Hubert Vandenabeele, Mortsel,all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

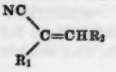
Filed Sept. 14, 1972, Ser. No. 289,093
Claims priority, application Great Britain, Sept. 17, 1971, 43518/71
Int. Cl. G03c *5/30, 1/06, 1/34*
U.S. Cl. 96—66.3 **9 Claims**

1. Method of producing photographic images, which comprises developing an exposed photographic element comprising a support and at least one photographic silver halide emulsion, at a temperature above 30°C, wherein the said development is carried out in the presence of at least one nitrile compound selected from the group consisting of:

(a) benzene compounds carrying at least 2 cyano groups on the benzene nucleus

(b) π-deficient heterocycles carrying at least 1 cyano group on the heterocyclic nucleus, and

(c) compounds carrying at least one cyano group on an olefinic group, which correspond to the formula:



wherein:

R_1 is a cyano group or a π-deficient heterocycle, and

R_2 is an aryl group or a heterocycle.

3,841,879

DIFFUSION TRANSFER PROCESSING COMPOSITION CONTAINER WITH COLLOIDAL SILICA VISCOSITY INCREASING AGENT

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 247,025, April 24, 1972, Pat. No. 3,776,726. This application June 27, 1973, Ser. No. 374,253
Int. Cl. G03c *5/30, 1/48*
U.S. Cl. 96—76 C **10 Claims**

1. A rupturable container for use in diffusion transfer film units adapted to provide color transfer images viewable by reflected light, said rupturable container releasably holding an aqueous alkaline processing composition comprising a water-soluble, film-forming polymer, a light-reflecting pigment and colloidal silica.

3,841,880

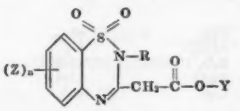
SILVER HALIDE EMULSION CONTAINING KETOMETHYLENE PHOTOGRAPHIC COLOR-FORMING COUPLERS

Stanley S. Kertel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,609
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **21 Claims**

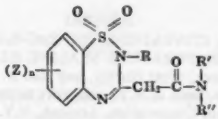
1. A light-sensitive photographic element comprising a photographic support having coated thereon at least one photosensitive silver halide emulsion layer containing at least one color coupler capable of forming a yellow dye when reacted with oxidized primary amino color developing agent; said color coupler being represented by the formula:

(1)



or

(2)



wherein

R is defined as hydrogen, or an alkyl group containing up to 15 carbon atoms;

Y is defined as an alkyl or an aryl group;

R′ is hydrogen or an alkyl group containing 1–5 carbon atoms;

R″ is an alkyl or an aryl group; and

Z is individually defined at each occurrence as a halo group, an alkoxy group or an alkyl group containing 1–18 carbon atoms; and

n is 0–2.

3,841,881
METHOD FOR ELECTROLESS DEPOSITION OF METAL USING IMPROVED COLLOIDAL CATALYZING SOLUTION

Nathan Feldstein, Kendall Park, N.J., and Thomas Stephen Lancsek, Morrisville, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,777
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **8 Claims**

1. A colloidal catalytic solution for catalyzing a substrate prior to electroless metal deposition thereon, said catalyst comprising the solution resulting from the admixture of an acid soluble salt of a catalytic metal selected from the group consisting of gold, and the platinum family of metals, hydrochloric acid, a stannous salt soluble in aqueous solution, said stannous salt being in excess of the amount necessary to reduce said metal salt to colloidal metal, and a quantity of a solution of stannic chloride which has been separately aged for the equivalent of at least 4 days at room temperature prior to admixture, said stannic compound being present in a concentration of about 0.01 to 0.5 molar in said catalytic solution.

3,841,882
CLADDING GLASS COMPOSITIONS FOR LIGHT TRANSMITTING GLASS FIBERS

Warren W. Wolf, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 113,688, Feb. 8, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 298,128
Int. Cl. C03c *13/00;* **G02b** *5/14*
U.S. Cl. 106—50 **1 Claim**

1. A light transmitting glass fiber comprising a core glass surrounded by a cladding glass;

said core glass having an index of refraction greater than said cladding glass; and

said core glass consisting essentially by weight of:

	Percent
SiO_2	23–41
Al_2O_3	7–10
B_2O_3	2.5–11
K_2O	up to 10
BaO	34–59
Sb_2O_3	up to 0.05

and wherein the improvement comprises said cladding glass consisting essentially by weight of:

SiO_2	64–66
Al_2O_3	8–9
B_2O_3	11–12
Na_2O	13–15
Li_2O	2–3

3,841,883
Bi_2O_3 CONTAINING PbO-ZnO-B_2O_3 LOW TEMPERATURE SEALING GLASS

Thomas A. Sherk, West Hurley, and Rao R. Tummala, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1973, Ser. No. 384,314
Int. Cl. C03c *3/10, 3/12, 3/30*
U.S. Cl. 106—53 **6 Claims**

1. A sealing glass composition having a thermal coefficient of expansion (from room temperature to 300°C) in a range of $80–83\times10^{-7}$ per °C consisting essentially of the following ingredients in the following proportions:

		Per cent by weight
Lead oxide	(PbO)	60.5 – 64.0
Boric oxide	(B_2O_3)	14.5 – 17.5
Zinc oxide	(ZnO)	14.5 – 15.2
Silicon oxide	(SiO_2)	1.0 – 3.0
Copper oxide	(CuO)	3.0 – 4.5
Bismuth oxide	(Bi_2O_3)	1.3 – 2.5

3,841,884
HIGH ALUMINA REFRACTORY

Robert E. Farris, Pleasanton, and Maurice E. Green, Jr., Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 3, 1973, Ser. No. 385,428
Int. Cl. C04b *35/10, 35/14*
U.S. Cl. 106—65 **16 Claims**

1. A refractory composition consisting essentially of from about 35% to 50% by weight of a fine fraction all passing a 65 mesh screen, from about 40% to 55% by weight of a coarse fraction all retained on a 28 mesh screen, and from about 5% to 20% by weight of an intermediate fraction passing a 28 mesh screen and retained on a 65 mesh screen, characterized in that (a) at least 90% of the fine fraction is (i) from 3% to 7% by weight, based on the total weight of the composition, silica passing a 325 mesh screen and (ii) alumina containing at least 95% Al_2O_3, at least 40% of the alumina passing a 325 mesh screen, the balance of the fine fraction being calcined flint clay, (b) at least two-thirds of the coarse fraction is sized calcined flint clay, the balance being alumina containing at least 95% Al_2O_3, and (c) the intermediate fraction consists essentially of material selected from the group (i) calcined flint clay and (ii) alumina containing at least 95% Al_2O_3.

3,841,885
CEMENTITIOUS ROOFING AND SIDING

Gus R. Jakel, Glendale, Calif., assignor to California Cement Shake Co., Inc., Alhambra, Calif.

Filed Nov. 6, 1972, Ser. No. 303,677
Int. Cl. C04b *7/02*
U.S. Cl. 106—93 **9 Claims**

1. In the process of making a lightweight, fireproof and waterproof construction slab, the steps that include:

a. combining Portland cement, perlite, glass fiber, cellulose pulp, a sub-mix and water to form an aqueous admixture, and

b. forming and curing the slab from said admixture, said forming including subjecting the formed slab to pressurization to squeeze water therefrom,

c. said sub-mix having been preliminarily prepared by combining quick lime and water to form a mix reacting exothermically, and adding fatty material to the reacting mix, and in the relative amounts
between 45 and 55 pounds of quick lime
between 25 and 30 gallons of water
between 1.5 and 2.5 gallons of fatty material

d. the constituents of the admixture being present in the relative amounts:
between about 180 and 195 pounds of cement
between about 72 and 90 pounds of perlite
between about 38 and 46 gallons of aqueous cellulose pulp containing said glass fiber, and
between about 7 and 9 gallons of said sub-mix

e. the pulp and glass fiber being present in the relative amounts:
between 40 and 48 pounds of cellulose
between 2 and 4 pounds of glass fiber.

3,841,886
REFRACTORY CEMENT INCORPORATING FLUXING COMPONENT

Harley W. Burr, Santa Ana, Calif., assignor to Motus Chemical, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 243,787, April 13, 1972, abandoned. This application Dec. 15, 1972, Ser. No. 315,712
Int. Cl. C04b *11/00, 35/14*
U.S. Cl. 106—109 **7 Claims**

1. A structural member, comprising, exclusive of H_2O, about 60–90 weight percent calcium sulfate and about 40–10 weight percent flux and grog material, said calcium sulfate containing water of hydration, said flux and grog material comprising about 0.2 to about 50 weight percent primary

fluxing component and about 99.8 to about 50 weight percent grog component, and an amount of H_2O sufficient to form said structural board, said fluxing component being present in sufficient amount to provide at least 2 weight percent based on the content of said calcium sulfate in said composition.

3,841,887
DYESTUFF COMPOSITIONS CONTAINING LIGNIN SURFACTANTS CARBOXY SUBSTITUTED

Sten I. Falkehag, Mount Pleasant, and Carl W. Bailey, III, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed July 27, 1972, Ser. No. 275,535
Int. Cl. C08h *15/02*
U.S. Cl. 106—123 LC **6 Claims**

1. A dyestuff composition comprising a disperse dye cake and from 1 percent to 75 percent by weight of said dye cake, of the derivative of a lignin-based material, said derivative containing from 1 to 20 moles per 1,000 grams of a carboxymethylated lignin and made by reacting lignin with a halogen-containing methane carboxylate wherein the methane is halogen substituted.

3,841,888
AQUEOUS PIGMENT DISPERSIONS

Horst Belde; Knut Oppenlaender; Ewald Daubach, and Rolf Fikentscher, all of Ludwigshafen, Germany, assignors to Badische Anilin- and Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 3, 1972, Ser. No. 303,624
Int. Cl. C08h *17/02;* **C09c** *3/02*
U.S. Cl. 106—288 Q **8 Claims**

1. An aqueous pigment dispersion which does not flocculate in a cellulose-ether-containing emulsion paint or distemper which contains, with reference to the total weight of (a) + (b) + (c):

(a) from 20 to 55 percent by weight of a finely divided pigment;

(b) from 5 to 25 percent by weight of a water-soluble surfactant or mixture of surfactants obtained by reaction of (α) an amine of the formula

$$H_2N-\left(\begin{matrix}R^1\\ |\\ R-N\end{matrix}\right)_n-H$$

in which

R is saturated alkylene of 2 to 6 carbon atoms,

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, cyclohexyl or phenyl, and

n is one of the integers from 1 to 5 and when n is equal to 1 the group NHR^1 may be combined with the other amino group, or

(β) an aromatic or cycloaliphatic diamine; with from 3 to 50 moles of propylene oxide per equivalent of reactive amino hydrogen and then with from 2 to 70 moles of ethylene oxide per equivalent of reactive amino hydrogen; and

(c) from 40 to 75 percent by weight of a mixture of water and a water-retaining agent.

3,841,889
PROCESS FOR THE PRODUCTION OF EASILY LAKED AZO PIGMENTS

Klaus Schrempp, Ludwigshafen, Germany, assignor to Badische Anilin- and Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 9, 1973, Ser. No. 322,204
Claims priority, application Germany, Jan. 18, 1972, 2202143
Int. Cl. C08h *17/04, 17/66*
U.S. Cl. 106—289 **9 Claims**

1. In a process for the production of a laked azo pigment obtained by coupling an aromatic amine bearing an acid group with an aromatic compound capable of coupling followed by laking of the coupling product, the improvement for obtaining a more easily dispersable pigment which comprises carrying out the laking step in the presence of:

a. from 5 to 30 percent by weight (based on the coupling product) of a water-soluble salt of polymerized abietic acid; and

b. from 5 to 15 percent by weight (based on the coupling product) of a water-soluble salt of a dialkyl sulfosuccinate of 5 to 15 carbon atoms per alkyl group.

3,841,890
PLASTICIZER SYSTEMS FOR POLYVINYL BUTYRAL INTERLAYERS

Anthony W. M. Coaker, St. Louis; Joseph R. Darby, Webster Groves, and Thomas C. Mathis, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 7, 1972, Ser. No. 313,151
Int. Cl. C08k *1/36;* **C08f** *45/50*
U.S. Cl. 106—316 **7 Claims**

1. A plasticizer system for polyvinyl butyral interlayers used in laminated safety glass which plasticizer system comprises a blend of (1) at least one phosphate plasticizer and (2) at least one adipate plasticizer; wherein the phosphate plasticizer corresponds to the following general formula:

R_3PO_4

wherein R is selected from the group consisting of aryl, alkaryl wherein the alkyl group contains from 1 to 3 carbon atoms, alkyl of from 1 to 12 carbon atoms, alkoxyalkyl of from 1 to 9 carbon atoms and cycloalkyl, with the proviso that when all of the radicals represented by R in a given compound are alkyl radicals each alkyl radical must have 4 or more carbon atoms; wherein the adipate plasticizer is selected from the group consisting of dihexyl adipate and a C_7-C_9 adipate; wherein the phosphate plasticizer and the diester plasticizer have vapor pressures of less than 10 millimeters (mm) at 175°C.; and wherein the ratio of phosphate plasticizer to diester plasticizer is in the range from 80:20 to 20:80.

3,841,891
METHOD OF PRODUCING COLORED ALUMINUM

Jon W. Pallant, Painesville, Ohio, assignor to Metalphoto Corporation, Cleveland, Ohio

Filed Oct. 27, 1972, Ser. No. 301,439
Int. Cl. B44d *1/52*
U.S. Cl. 117—8.5 **4 Claims**

1. A process for producing anodized aluminum articles in which selected surface areas are colored, which comprises:

preheating an unsealed, dyed anodized article;

laminating the preheating anodized article to a transparent photopolymerizable material;

curing the resulting laminate;

exposing the photopolymerizable material to a pattern of suitable radiation sufficient to effect the polymerization of areas exposed to said radiation;
developing the resulting resist by applying a solvent for the unpolymerized, photopolymerizable material, to the surface of the article after said exposure step;
leaching the dye from the resulting bare areas of said surface;
rinsing the article;
coloring the bare areas from which the dye has been leached;
stripping the polymerized areas from said article;
and thereafter sealing the resulting colored article.

3,841,892

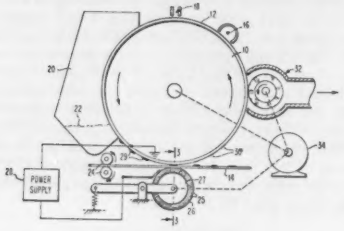
METHOD FOR TRANSFERRING DEVELOPED IMAGE

K. A. Krause, Mountain View, and Yaqub Moradazeh, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 92,038, Nov. 23, 1970, Pat. No. 3,691,993. This application Aug. 10, 1972, Ser. No. 279,428

Int. Cl. G03g *13/16, 15/16*

U.S. Cl. 117—17.5 **3 Claims**



1. The method of transferring a developed image comprising electrostatically charged developer particles from an image forming surface to a web of transfer material comprising the steps of:
forming a developed image on an image forming surface;
placing over the developed image a web of transfer material;
rotating a brush means comprising a plurality of conductive fibers;
producing a constant potential difference between said brush means and said image forming surface; and
producing relative motion between the brush means and the image forming surface so that the tips of the fibers move the web of transfer material into abutting contact with said image forming surface whereby said potential is operative to transfer the developed image to said web of transfer material.

3,841,893

CHARGE CONTROL AGENTS FOR LIQUID DEVELOPERS

Satoru Honjo, Tokyo; Hajime Miyatuka, Asaka, and Sadao Osawa, Kawaguchi, all of Japan, assignors to Rank Xerox, Ltd., London, England

Division of Ser. No. 121,537, March 5, 1971, Pat. No. 3,729,419. This application Oct. 13, 1972, Ser. No. 298,721

Claims priority, application Japan, Mar. 12, 1970, 45-20984

Int. Cl. G03g *9/04, 13/10*

U.S. Cl. 117—37 LE **6 Claims**

1. A method of developing an electrostatic latent image of negative polarity present on an imaging surface comprising contacting said imaging member with an electrostatographic liquid developer comprising an insulating carrier liquid and uniformly dispersed therein finely divided positively charged electroscopic marking particles, said liquid developer further comprising an amount of a charge control agent which is soluble in said carrier liquid and present in an amount of from about 0.5 to about 2.0 percent by volume of the developer, said agent being selected from the group consisting of vinyltriethoxysilane, γ-glycidoxy-propyltrimethoxysilane, and β-(3,4-epoxycyclohexyl)ethylitrimethoxysilane and mixtures thereof sufficient to provide a stable positive charge on the electroscopic marking particles.

3,841,894

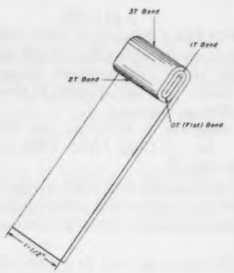
MINIMIZING CRAZING OF HOT-DIP ALUMINUM COATINGS

Ralph W. Leonard, Plum Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 20, 1972, Ser. No. 290,612

Int. Cl. C23c *1/08*

U.S. Cl. 117—50 **5 Claims**



1. In the method for hot-dip aluminizing of ferrous substrates to produce a protective coating thereon, which comprises; cleaning said substrate and thereafter passing said substrate through a bath of molten aluminum consisting essentially of from about 4 to 11% Si, from about 0.1 to about 3.0% Fe,
the improvement which comprises, adding Mn to said molten bath in an amount sufficient to maintain a concentration of from about 0.2 to about 1.5 percent.

3,841,895

FLEXIBLE HYDROCARBON RUBBER SUBSTRATE FINISHED WITH A THERMOSETTING ACRYLIC ENAMEL

Robert M. Hick, Springfield, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1972, Ser. No. 319,897

Int. Cl. B41m *1/18;* **B44c** *3/02;* **B44d** *1/02*

U.S. Cl. 117—72 **16 Claims**

1. A flexible hydrocarbon rubber substrate finished with 0.1-10 mil thick finish of a cross-linked thermosetting acrylic enamel; wherein the film-forming constituents of the enamel comprise:
A. 70–95 percent by weight, based on the weight of the film-forming constituents, of an acrylic polymer consisting essentially of
1. 19–44 percent by weight, based on the weight of the acrylic polymer, of an alkyl methacrylate having one to four carbon atoms in the alkyl group or styrene, or a mixture thereof:
2. 50–75 percent by weight, based on the weight of the acrylic polymer, of an alkyl methacrylate having 6–12 carbon atoms in the alkyl group or an alkyl acrylate

having 2–12 carbon atoms in the alkyl group or a mixture thereof;

3. 5–20 percent by weight, based on the weight of the acrylic polymer, of a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate or a mixture thereof having two to four carbon atoms in the alkyl groups; and
4. 1 to 20 percent by weight, based on the weight of the acrylic polymer, of an α,β-ethylenically unsaturated carboxylic acid;

B. 5–30 percent by weight, based on the weight of the film-forming constituents, of a compatible alkylated melamine formaldehyde having one to eight carbon atoms in the alkyl group or a polyisocyanate;

wherein the flexible hydrocarbon substrate comprises a surface activated saturated or unsaturated hydrocarbon rubber from the group of ethylene-propylene copolymer rubber, ethylene-propylene-diene copolymer rubber, styrene-butadiene copolymer rubber, polybutadiene rubber, polyisoprene rubber and butyl rubber.

3,841,896

CORROSION INHIBITED, COATED METAL ARTICLE

Wilburn A. Boggs, Smyrna, and Robert N. Miller, Atlanta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 124,461, March 15, 1971, Pat. No. 3,730,937, which is a continuation-in-part of Ser. No. 615,311, Feb. 13, 1967, abandoned. This application Nov. 13, 1972, Ser. No. 306,362

Int. Cl. B32b *15/08*; **C09d** *3/48*

U.S. Cl. 117—75 **4 Claims**

1. A coated article comprising a metal substrate covered at least in part by a coating and sealing material to a thickness of up to about 3 mils, said material consisting essentially of a resilient, curable elastomeric polysulfide polymer and a corrosion-inhibiting, soluble chromate compound in a quantity sufficient to assure an available amount thereof of at least about two percent by weight of the polymer when cured whereby to yield at least about a 10^{-3} Molar concentration of chromate ions concurrently with the appearance of aqueous corrosive fluids.

3,841,897

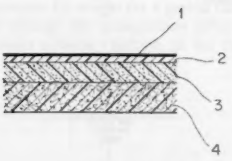
ARTIFICIAL LEATHER

Kaoru Okazaki; Aira Higuchi, and Naoki Imaeda, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 17, 1972, Ser. No. 298,449

Int. Cl. B44d *1/14*

U.S. Cl. 117—76 T **25 Claims**



1. Artificial leather comprising a fibrous substrate having a thickness of about 0.3 to 3.0 mm, said substrate comprising a fabric impregnated with a polymer, and coating layers (III), (II) and (I) adhered in that order to the surface of said substrate,

a. the coating layer (III) having a thickness of about 0.1 to 3.0 mm, and comprising a wet coagulated polymer composition which contains about 50 to 300 parts by weight of inorganic particles per 100 parts by weight of polymer, said inorganic particles having a mean particle diameter of about 0.03 to 5.0 micron and being essentially insoluble in water, and the polymer in this polymer composition consisting of at least about 60 percent by weight of polyurethane,

b. the coating layer (II) having a thickness of about 0.01 to 0.3 mm, and comprising a wet coagulated polymer composition which contains about 0 to 50 parts by weight of inorganic particles per 100 parts by weight of polymer, said inorganic particles having a mean particle diameter of about 0.03 to 5.0 micron and being essentially insoluble in water, and the polymer in this polymer composition consisting of at least about 80 percent by weight of polyurethane, and

c. the coating layer (I) having a thickness of about 0.001 to 0.1 mm and having a 20 percent modulus of about 5 to 100 kg/cm², and comprising a dry-coagulated polymer composition, consisting essentially of at least about 80 percent by weight of polyurethane.

3,841,898

PROCESS FOR IMPARTING AN ANTI-FELTING FINISH TO ANIMAL FIBRES

Josef Hefele, Grafelfing, Germany, assignor to Kufner Textilwerke K.G., Munich, Germany

Continuation of Ser. No. 139,132, April 30, 1971, abandoned. This application June 21, 1973, Ser. No. 372,115

Claims priority, application Germany, May 14, 1970, 2023671

Int. Cl. B44f *1/08*

U.S. Cl. 117—76 T **6 Claims**

1. A process for imparting an antifelting finish to animal fibres which comprises a first step of applying to the fibers at least one compound selected from the group consisting of aliphatic and cycloaliphatic diamines and polyamines from an aqueous solution thereof and a second step of applying an aqueous solution of a salt of a synthetic resin base to the resulting fibers and heating the fibers to condense the synthetic resin base from the applied solution onto the fibers said synthetic resin base salt being selected from the group consisting of polyurethane sulphonium halides and water-soluble polyamidoamine salts of organic or inorganic acids.

3,841,899

TREATING MILL AND CALENDER ROLLS IN RUBBER COMPOUNDING

Roy W. Siedenstrang, Stow, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1972, Ser. No. 301,900

Int. Cl. B05b *13/06*

U.S. Cl. 117—94 **12 Claims**

1. In a process of rubber compounding wherein at least one elastomeric stock is contacted by roll surfaces, the improvement which comprises treating said roll surfaces with at least one roll release agent which is an alkanolamine, alkylene glycol, or mixture, in an amount sufficient to act as a release agent toward said elastomeric stock.

3,841,900

APPARATUS AND METHOD FOR OBTAINING UNIFORM COATING THICKNESS

Calvin E. Parker, Sr., Walnut Creek, Calif., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

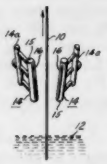
Division of Ser. No. 223,535, Feb. 4, 1972, Pat. No. 3,773,013. This application Apr. 5, 1973, Ser. No. 348,396

Int. Cl. B05c *11/10*

U.S. Cl. 117—102 M **5 Claims**

1. An improvement in the method of controlling the thickness of a metal coating on a vertically moving strip as it leaves a bath of molten coating metal, comprising directing a narrow stream of fluid angularly downwardly across the face of said strip on each side thereof, the streams on opposite sides of said

strip being in registry, the height of the point of impingement of said fluid increasing and the force per unit area of said fluid



decreasing as said point of impingement progresses from one edge of the strip to the other.

3,841,901
ALUMINUM-AND MOLYBDENUM-COATED NICKEL, COPPER OR IRON CORE FLAME SPRAY MATERIALS

Edward Robert Novinski, Mineola, and John H. Harrington, Warwick, both of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed July 6, 1973, Ser. No. 377,151
Int. Cl. B05b *7/20*
U.S. Cl. 117—105.2 **20 Claims**

1. A flame spray material in the form of a composite suitable for flame spraying comprising components of aluminum, molybdenum and at least one metal selected from the group consisting of nickel, copper and iron, based on the total weight of nickel, copper, iron, aluminum and molybdenum the nickel plus copper plus iron being present in about 66 to 97.5 percent, the aluminum in about 2 to 18 percent and the molybdenum in about 0.5 to 16 percent.

3,841,902
DURABLE FIRE RETARDANT FABRICS MADE USING ORGANIC SOLVENT SYSTEMS OF BROMINATED PHOSPHATE MONOMERS

James M. Thompson, Salisbury, N.C.; Carmine P. Iovine, Somerset, and Dilip K. Ray-Chaudhuri, Somerville, both of N.J., assignors to National Starch and Chemical Corporation, Plainfield, N.J.

Filed Sept. 15, 1972, Ser. No. 289,341
Int. Cl. B44d *1/50*
U.S. Cl. 117—136 **10 Claims**

1. A method of producing a textile product having durable fire retardancy and durable press properties which comprises:
A. providing a substantially anhydrous solution in a volatile organic solvent of the following ingredients in the weight percentages indicated of the total solution:

(a)	bis-(2,3-dibromopropyl) acryloxyethyl phosphate	10–50%
(b)	diallyl phthalate	1–10%
(c)	polymethoxy methyl melamine	1–15%
(d)	dimethylol allyl carbamate	1–15%
(e)	organic peroxide catalyst	0.1–5%
(f)	aryl sulfonyl chloride catalyst	0.1–3%

B. applying said anhydrous solution to a fabric in such quantity that the weight ratio of said ingredient (a) applied to the dry weight of the fabric is between 1:10 and 5:10,
C. evaporating substantially all volatile organic solvent from the fabric resulting from step B, and
D. heating the solvent-freed fabric to a temperature of 80° to 200°C. for between about 1 to 60 minutes to cure and set ingredients (a), (b), (c) and (d) upon the fabric.

3,841,903
PROCESS FOR PRODUCING PAPER-LIKE SYNTHETIC RESIN FILM

Ching Yun Huang, and Rokuro Fujita, both of Osaka, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 114,612, Feb. 11, 1971, abandoned. This application Feb. 13, 1973, Ser. No. 332,166
Claims priority, application Japan, Feb. 16, 1970, 45-12610
Int. Cl. B44d *1/44, 5/04*
U.S. Cl. 117—138.8 F **10 Claims**

1. A process for producing a paper-like film, which comprises dissolving a copolymer selected from the group consisting of methacrylic acid-styrene, acrylic acid-styrene, methacrylic acid-methyl methacrylate, acrylic acid-methyl methacrylate-butyl acrylate, vinyl pyrrolidone-styrene-methyl methacrylate, acrylic acid-vinyl acetate-acrylonitrile-butyl acrylate, acrylic acid-styrene-acrylonitrile-butyl acrylate, β-hydroxyethyl methacrylate-maleic anhydride-methyl methacrylate, methacrylic acid-N-methylol acrylamide-methyl methacrylate, acrylic acid-N,N-dimethylaminoethyl methacrylate-styrene and acrylic acid-acrylamide-styrene copolymers or a hydrolysis product of vinyl acetate-styrene copolymer in a solvent which is at least one member selected from the group consisting of methanol, ethanol, n-propanol, n-butanol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, dioxane, tetrahydrofuran, acetone, methyl ethyl ketone, cyclohexanone, methyl acetate and ethyl acetate, the concentration of copolymer in the resulting solution being 7–50 percent by weight, coating the resulting solution on a synthetic resin substrate film and drying the coated synthetic resin film in an atmosphere having a temperature of at least 10° C and a relative humidity of at least 50 percent, thereby whitening said copolymer.

3,841,904
METHOD OF MAKING A METAL SILICIDE-SILICON SCHOTTKY BARRIER

Yuen-Shenk Chiang, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,002
Int. Cl. H01c *7/00;* **B44d** *1/20*
U.S. Cl. 117—200 **5 Claims**

CLEAN SURFACE OF SILICON BODY
WASH SELECTED PORTIONS OF SURFACE
APPLY HF SOLUTION TO CLEANED SURFACE TO REMOVE OXIDES
APPLY SOLUTION OF Ir, Os, OR Pt SALT AND HCl TO FORM Ir, Os, OR Pt SILICIDE
WASH SURFACE IN DISTILLED H2O

1. A method of producing a metal silicide layer on a surface of a body of silicon comprising the steps of:

applying a 10–50% HF solution to a cleaned surface of said body to remove any oxides thereon,

adding, to said HF solution, a solution of 37% hydrogen chloride and a metal salt, the metal of said metal salt being selected from the group consisting of osmium, iridium, platinum, and mixtures thereof to react with said body of silicon at room temperature, said solutions being in the proportion of between 0.3–1.0 ml of said 37% hydrogen chloride solution and between 1.0 and 10 ml of said 0.1% metal salt solution to 10–30 ml of said HF solution, whereby to form said metal silicide layer on said surface, and

removing said solutions from said layer.

3,841,905

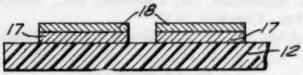
METHOD OF PREPARING PRINTED CIRCUIT BOARDS WITH TERMINAL TABS

Charles H. Dixon, III, Milwaukee, Wis., assignor to RBP Chemical Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 90,908, Nov. 19, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 322,040

Int. Cl. G23f *1/02*

U.S. Cl. 117—212 **2 Claims**



1. The method of preparing terminal tabs for a printed plastic circuit board of the type having terminal tabs for connection to circuits not on the circuit board including the steps of: laminating a copper foil sheet to a fiber-glass base board, applying a layer of resist to the copper foil, applying a layer of metal from the group of tin and lead-tin solder in the spaces between the resist and on the copper foil, removing portions of the resist layer, etching paths between portions of the copper foil to form copper terminal portions covered by a layer of the solder or tin, removing the solder layer from the copper terminal portions by exposing the solder to a composition comprising ammonium bifluoride in the range of 10 percent to 25 percent by weight, hydrogen peroxide in the range of 1 percent to 5 percent by weight and water in the range of 89 percent to 70 percent by weight for a period sufficient to strip the solder and rinsing the composition when the solder is stripped to prevent adverse reaction to the copper and the plastic board.

3,841,906

METHOD OF TREATING A CARBON CURRENT COLLECTION BRUSH BLANK AND BRUSH RESULTING THEREFROM

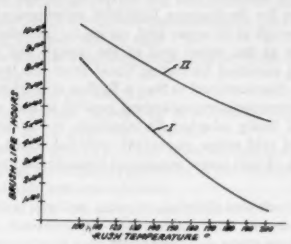
Albert L. Grunewald, Stroudsburg, Pa., and George H. Gunnoe, Schenectady, N.Y., assignors to General Electric Company, Lynn, Mass.

Filed Sept. 14, 1972, Ser. No. 289,173

Int. Cl. B44d *1/20, 1/46*

U.S. Cl. 117—228 **9 Claims**

1. A method of treating a carbon current collection brush blank which comprises providing a carbon current collection brush blank, contacting the brush blank with a solution of zinc naphthenate, baking the brush blank at a temperature in the temperature range of from 180° to 200°C thereby reducing the



amount of zinc naphthenate in the brush blank to 4 to 6 weight percent of the brush blank weight.

3,841,907

FERROMAGNETIC CHROMIUM DIOXIDE CRYSTALS AND MAGNETIC RECORDING MEDIUM CONTAINING SAME

Bernd Leutner, Maxdorf; Matthias Schwarzmann, Limburgerhof, and Manfred Ohlinger, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik, Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Apr. 18, 1972, Ser. No. 245,271

Claims priority, application Germany, Apr. 24, 1971, 2120206

Int. Cl. C01g *37/02*

U.S. Cl. 117—234 **2 Claims**

1. Stabilized ferromagnetic chromium dioxide which comprises chromium dioxide crystals in which the surface of said crystals is coated with from 0.1 to 30 percent by weight of the chromium dioxide of a substantially water-insoluble compound selected from the group consisting of

1. the oxides, hydroxides, sulfides and silicates of divalent lead;
2. the sulfates and silicates of calcium, strontium and barium;
3. the salt of an alkane carboxylic acid having six to 24 carbon atoms and a metal cation selected from the group consisting of divalent lead and mercury; and
4. the chromates of divalent lead.

3,841,908

AUXILIARY SCREW CONVEYORS

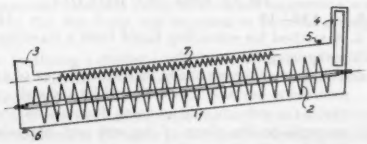
Jorgen Giersing, Stege, Denmark, assignor to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Oct. 25, 1972, Ser. No. 300,494

Claims priority, application Great Britain, Oct. 25, 1971, 49496/71

Int. Cl. C13d *1/08*

U.S. Cl. 127—5 **3 Claims**



1. A lixiviating apparatus comprising an inclined trough, at least two screw conveyors rotatable about parallel axes

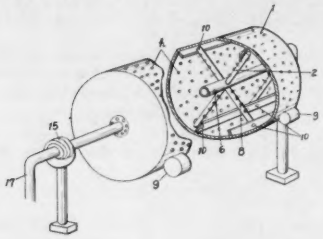
mounted in said trough for transporting disintegrated material from the lower end of the trough towards its upper end in countercurrent with lixiviating liquid, means for introducing disintegrated material into the lixiviating trough at its lower end, means for discharging lixiviated disintegrated material from the trough at its upper end, means for introducing lixiviating liquid at the upper end of the trough and means for discharging enriched lixiviating liquid from the trough at its lower end, characterized in that is further comprises auxiliary means of transportation extending parallel to said screw conveyors and being adapted to transport in the longitudinal direction of said screw conveyors material which is pressed out of each of said screw conveyors towards the lower end of the trough.

3,841,909

METHOD AND APPARATUS FOR REMOVING GREASE FROM ANIMAL BONES

Yoshihiro Nonaka, and Jozo Nakanishi, both of Osaka, Japan, assignors to Nitta Gelatin Kabushiki Kaisha, Yao City, Osaka Pref., Japan

Filed Aug. 4, 1972, Ser. No. 277,865
Int. Cl. B08b *3/06;* **C09h** *1/02;* **C11b** *1/14*
U.S. Cl. 134—5 **2 Claims**



1. A method for removing grease from animal bones comprising the steps of placing said bones in a drum, slowly revolving said drum and raking up said bones from the bottom of said drum for gravity descent in said drum thereby constantly agitating said bones, and subjecting said bones to jets of boiling water at high pressure by pipes inside and attached to and revolving with the drum, said boiling water impinging against the bones in a direction opposite to that of rotation of the drum, said bones being subjected directly to said jetted boiling water when said pipes pass through said bones in the bottom of said drum.

3,841,910

LIQUID EXTRACTING APPARATUS AND METHOD

Donald Brooks Baker, Foxboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

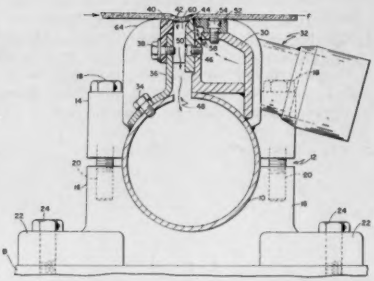
Continuation of Ser. Nos. 27,714, April 13, 1970, abandoned, and Ser. No. 266,124, June 26, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 339,972
Int. Cl. B08b *5/02;* **D21f** *1/32*
U.S. Cl. 134—15 **12 Claims**

1. A method for extracting liquid from a traveling porous web comprising the steps of:

directing into the web at one face thereof a jet of gas under pressure at one side of a wall, said jet and wall extending across the web and said jet being directed into the web at an angle to the plane of the web and opposite to the direction of web travel;

causing the jet to be reflected back from adjacent the opposite web face to and out said one web face at an opposite angle and at the opposite side of said wall, carrying extracted liquid therewith;

tensioning said web against the edge of said wall to form a seal preventing lateral flow of said jet between said wall edge and the web; and



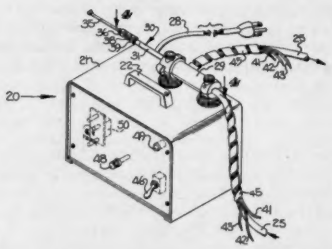
collecting the liquid discharged by said jet in a chamber at the opposite side of said wall from said jet.

3,841,911

METHOD FOR REMOVING HEAT DEGRADABLE TEXTILE WASTE MATERIAL FROM APPARATUS USED IN TEXTILE OPERATIONS

James H. Henderlite, III, Charlotte, N.C., assignor to Air Knife, Inc., Charlotte, N.C.

Division of Ser. No. 233,107, March 9, 1972,. This application Aug. 20, 1973, Ser. No. 389,899
Int. Cl. B08b *5/02*
U.S. Cl. 134—37 **3 Claims**



1. A method of removing, from apparatus used in textile operations, tenaciously adhered heat degradable textile waste material comprising the steps of:

transporting a manually portable housing to a location at which textile waste material is to be removed,

delivering through the manually portable housing a flowing stream of air at a volume rate of flow of at least about 0.4 cubic feet per minute,

passing the flowing stream of air from the housing through an elongate flexible conduit to a manipulable handle,

passing the flowing stream of air through an electrical resistance heater extending from the manipulable handle and heating the flowing stream of air to a temperature of at least about 1,000° F. while it passes there-through,

controllably delivering electrical current to the heater through the housing and through conductors extending between the housing and the handle,

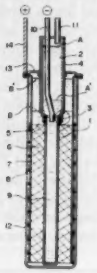
preventing delivery of electrical current through the housing and energization of the heater in the absence of the flowing stream of air and thereby protecting the heater against failure otherwise possibly occurring due to energization thereof while no air is flowing therethrough, and

manipulating the handle to direct the heated air against the waste material to be removed at a velocity of at least about 8,000 feet per minute.

3,841,912
SODIUM SULFUR STORAGE BATTERY

Hiroshi Kagawa, and Keiji Senoo, both of Osaka, Japan, assignors to Yuasa Battery Company Limited, Osaka, Japan

Filed Apr. 2, 1973, Ser. No. 346,805
Claims priority, application Japan, Sept. 9, 1972, 47-90726; Sept. 9, 1972, 47-90727
Int. Cl. H01m *43/00*
U.S. Cl. 136—6 FS **3 Claims**

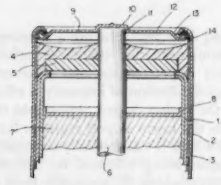


1. A sodium sulfur storage battery comprising in combination: a sealed casing; a solid electrolyte arranged within said casing; sulfur or sodium polysulfide acting as a cathodic reactant arranged outside of said solid electrolyte; sodium acting as an anodic reactant arranged within said solid electrolyte; a sodium reservoir arranged adjacent to said solid electrolyte and having a jointing surface therewith; said sulfur or sodium polysulfide being positioned adjacent to said jointing surface and having its upper level always above the jointing surface of said solid electrolyte and sodium reservoir irrespective of the charged or discharged state.

3,841,913
UNITARY CATHODE COVER

Charles E. Anderson, Monona, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Dec. 15, 1972, Ser. No. 315,301
Int. Cl. H01m *1/02*
U.S. Cl. 136—107 **3 Claims**



1. In a battery comprising an inner cylindrical metal container anode closed at its bottom end and open at its top end; a carbon cathode rod positioned inside the container anode and along its vertical axis, said cathode rod being electrically insulated from the bottom of said anode; an electrolyte between said anode and said cathode rod; a vented conductive cathode cover, and an outer cylindrical container having a downwardly crimped upper inside wall, wherein a portion of the carbon cathode rod protrudes beyond the open top end of the container anode, the improvement comprising a unitary conductive spring metal cathode cover having:

A. a raised terminal cap portion which envelopes at least the end portion of the carbon rod protrusion, said cap portion having an open bottom end;

B. a disc portion extending outwardly from the open end of said cap;

C. an outer rim portion; and

D. a wall portion depending downwardly from the disc portion to the outer rim portion,

wherein the vertical axis of the terminal cap portion of the cathode cover corresponds generally to the vertical axis of the carbon cathode rod and wherein:

a. in a first position, prior to assembly into the battery, the angle between the disc portion and the terminal cap portion of said cathode cover is an acute angle; and

b. in a second position, upon assembly into the battery, the upper inside wall of the outer container is crimped downwardly over the outer rim portion of the cathode cover so as to exert a downward compressive force on said cover and

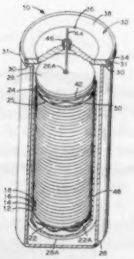
i. the angle between the disc portion and the terminal cap portion of said cathode cover is greater than the angle prior to assembly into the battery, and

ii. the carbon cathode rod is axially compressed between the cathode cover and the bottom end of the container anode.

3,841,914
SOLID STATE BATTERY STRUCTURE

Gerard H. Boyle, West Concord; James Epstein, Sharon, and Charles C. Liang, Andover, all of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 19, 1972, Ser. No. 254,996
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 **6 Claims**



1. A solid state battery assembly comprising:

a plurality of stacks of solid state cells, the cells of each stack connected in series, and the stacks connected in parallel, each cell consisting of anode and cathode components and a solid electrolyte therebetween, all of said component elements being in solid self-supporting state and in flat disc form and disposed in co-axial arrangement;

a first insulating cylinder encircling said stack of cells to insulate said cell components from inter-stack electrical connectors;

inter-stack electrical connectors disposed between adjacent terminal discs of the same polarity and extending through and along the wall of said first insulating cylinder such that all of the respective negative terminals of the several cell stacks are connected to one electrode terminal of the battery and all of the respective positive terminals of the

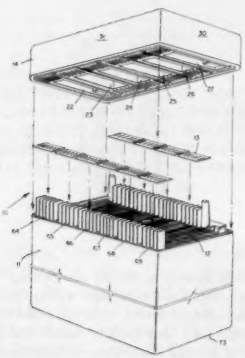
several cell stacks are connected to the other electrode terminal of the battery;
a second insulating cylinder encircling said inter-stack connectors to insulate said connectors from an external container;
at least one initially stress-energized resilient wave-type spring in annular form disposed at least at one end of the stack to compress the stack of component elements of the battery and to maintain them in operative condition and in electrical connection;
and an outer container to house said assembly, said container comprising a metallic can initially open at its top end and closed at its bottom end, said top end embodying an annular seat and a concentric rim edge, said top end being closed by means of a terminal assembly comprising: a metallic disc plate resting upon the uppermost wave-type spring;
a coaxial insulating disc coextensive with and resting upon said metallic disc plate, said insulating disc having a centrally located coaxial opening;
an annular top header resting upon said insulating disc and secured to the inner concentric rim edge of said metallic can to thereby seal the battery, said header comprising a central ceramic disc having a centrally disposed coaxial opening and a circular metallic annular ring bonded to the periphery of said ceramic disc, the diameter of said metallic annular ring substantially coextensive with the diameter of the inner rim edge of the metallic can to seat tightly therewithin;
and an axial conductor physically connected to said metallic disc plate and extending through said insulating disc and said central ceramic disc of said header to serve as one terminal for the battery.

3,841,915

BATTERY, COMPONENTS, AND METHOD OF MAKING

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Aug. 31, 1972, Ser. No. 285,460
Int. Cl. H01m 1/02
U.S. Cl. 136—134 R **13 Claims**



1. A battery of the multiple cell type comprising a casing having upper extremities and partition plates separating adjacent cells, a plurality of positive and negative battery plates alternately disposed in each cell, each of said plates having a lug portion extending above said upper extremities and above said partition plates, a unitary cover extending across said upper extremities and closing upper ends of said cells, and means connecting battery cell plates in a given cell of one polarity with cell plates of opposite polarity of an adjacent cell, said connecting means being totally above said upper extremities to connect cell plates at said portions extending above said upper extremities, said unitary cover being configured to define openings for said portions of cell plates extending above said upper extremities, and weldment means securing said connecting to said cell plates.

3,841,916

METHOD OF RECLAIMING ELECTROLYTE FOR REUSE IN BATTERIES

Roland A. Marchetti, 2780 N.W. North River Dr., Miami, Fla. 33142

Filed Sept. 5, 1972, Ser. No. 286,599
Int. Cl. H01m 47/00
U.S. Cl. 136—165 **2 Claims**

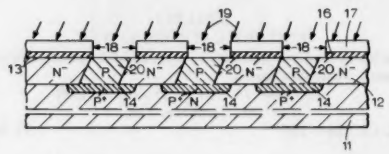
1. The method of reclaiming battery fluid from old batteries for use as electrolyte for new batteries comprising the steps of collecting said battery fluid into a settling tank that is impervious to sulfuric acid, permitting the settling of said fluid for a period not less than twenty-four hours, pumping only a portion of said fluid from a position above the bottom of said tank whereby those impurities that are heavier than the fluid and those that are floating thereon remain in said settling tank and only the relatively clear fluid is collected in a second tank impervious to sulfuric acid, the adding of concentrated sulfuric acid to said fluid whereby said fluid is brought up to a predetermined strength for use in new storage batteries, permitting the cooling of said fluid over a period of substantially thirty-six hours and filtering said cooled fluid thereby readying said fluid as electrolyte for use in new batteries.

3,841,917

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

John Martin Shannon, Salfords, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,456
Claims priority, application Great Britain, Sept. 6, 1971, 41462/71
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **15 Claims**



1. In a method of manufacturing a semiconductor device wherein in a semiconductor body comprising a boundary between a higher doped region and a lower doped region radiation enhanced diffusion of impurity is effected across the boundary from the higher doped region into the lower doped region to form in the lower doped region a further region the lateral extent of which is substantially constant, said radiation enhanced diffusion being effected by directing a beam of energetic particles towards the boundary from the side thereof at which the lower doped region is present to produce damage of the crystal structure in the lower doped region at least in the vicinity of the boundary, the improvement comprising orienting the semiconductor body with respect to the incident beam and imparting energy to the beam particles in such manner as to produce channelling of the semiconductor body crystal lattice by the particles with a channelling range in the lower doped region which extends at least to but not substantially beyond the said boundary.

3,841,918

METHOD OF INTEGRATED CIRCUIT FABRICATION

Jorge Agraz-Guerena, Whitehall; Paul Alexander Gary, Easton, and Martin Paul Lepselter, Hanover Township, Northampton County, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 1, 1972, Ser. No. 311,289
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 14 Claims

1. In a method for fabricating a semiconductor integrated circuit device including a transistor, comprising the steps of forming into the surface of a body of semiconductive material of a first conductivity type a first pattern comprising a plurality of zones of a second conductivity type, and forming an epitaxial layer of the first conductivity type over the surface of the body,

the improvement being the steps of:

ion implanting into the epitaxial layer a second pattern of zones of impurities of the second conductivity type registered with zones of the first pattern;

heating in a manner sufficient to diffuse the impurities through the epitaxial layer and simultaneously to oxidize selectively the surface of the epitaxial layer above the second pattern of impurities;

ion implanting a buried base zone beneath and separated from the surface of the epitaxial layer; and

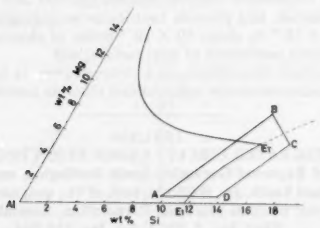
forming an emitter zone extending inward from the surface of the epitaxial layer to the base zone.

3,841,919

ALUMINUM-SILICON-MAGNESIUM TERNARY SUPERPLASTIC ALLOY AND METHOD FOR MANUFACTURE THEREOF

Takashi Hasegawa, and Takashi Oikawa, both of Tokyo, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1972, Ser. No. 283,429
Claims priority, application Japan, Aug. 28, 1971, 46-65578
Int. Cl. C22f 1/04
U.S. Cl. 148—2 10 Claims



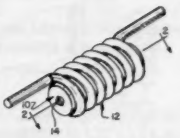
1. A superplastic alloy consisting of a composition falling within an area enclosed with straight lines drawn to connect Point A (89.8% Al, 9.7% Si, 0.5% Mg), Point B (78.6% Al, 14.1% Si, 7.3% Mg), Point C (78.5% Al, 16.6% Si, 4.9% Mg) and Point D (86.3% Al, 13.2% Si, 0.5% Mg) in a phase diagram of the ternary alloy Al-Si-Mg system, said alloy having a microtriplex structure wherein two precipitated phases composed of primary crystals of Si and precipitated crystals of Mg_2Si each having an average particle diameter of 2–3 μ are uniformly distributed throughout the mother phase of aluminum composed of aluminum crystals having an average particle diameter of up to 5μ.

3,841,920

METHOD OF MANUFACTURING AN INFRARED RADIATION SOURCE

James R. Martin, Willesley, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Division of Ser. No. 159,686, July 6, 1971, Pat. No. 3,737,625.
This application Jan. 2, 1973, Ser. No. 320,096
Int. Cl. H05b 3/10
U.S. Cl. 148—6.35 5 Claims



1. The method of manufacturing an infrared radiation source comprising:

coiling a wire of relatively high electrical resistance around a threaded metal core having a relatively high corrosion resistance to form a coil having a multiplicity of turns engaged in the threaded groove of said core and separated from adjacent turns;

rotating said core relative to said coil to at least partially withdraw said core from said coil and disengage turns thereof from said core;

concurrently heating said core and said coil in an oxidizing environment, and while said coil is being oxidized, rotating said core relative to said coil to progressively engage all of the turns thereof with said threaded groove.

3,841,921

PROCESS FOR TREATING COPPER ALLOYS TO IMPROVE CREEP RESISTANCE

Eugene Shapiro, Hamden, and Jacob Crane, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 2, 1973, Ser. No. 337,310
Int. Cl. C21d 1/04
U.S. Cl. 148—11.5 R 19 Claims

1. A process for improving the creep resistance and the stress relaxation resistance of copper base alloys having low stacking fault energy without significantly degrading tensile properties consisting essentially of:

a. providing a copper base alloy having a stacking fault energy of less than 30 ergs per square centimeter consisting essentially of a first element selected from the group consisting of about 2 to 12 percent aluminum, about 2 to 6 percent germanium, about 2 to 10 percent gallium, about 3 to 12 percent indium, about 1 to 5 percent silicon, about 4 to 12 percent tin, about 8 to 37 percent zinc, and the balance essentially copper;

b. cold working said alloy from about 10 to 97 percent;

c. forming said alloy into a desired final article;

d. heating said alloy without significantly degrading tensile properties to a temperature of from about 200° to 360°C for at least 1 minute; and

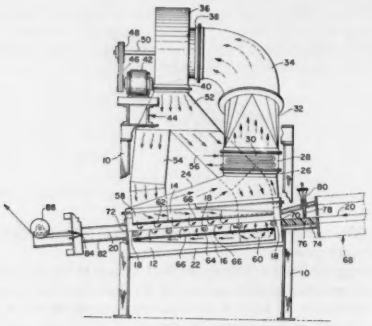
e. cooling said alloy to room temperature,

thereby improving the creep resistance and the stress relaxation resistance of said article.

3,841,922
PROCESS FOR THE ANNEALING OF PRECIPITATION HARDENING ALLOYS

Jean R. De Jarnett, Port Clinton, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio

Filed Mar. 16, 1973, Ser. No. 341,972
Int. Cl. C22f *1/02*
U.S. Cl. 148—13.2 6 Claims



1. A process for annealing a rolled sheet of precipitation hardening copper beryllium alloy with minimum distortion which comprises the steps of:

a. solutionizing a strip of a precipitation hardenable copper-beryllium alloy at a temperature of from 1,450°F to 1,700°F; and

b. quenching said strip rapidly to a temperature below about 250°F by passing said strip through a nonoxidizing gas quenching zone between a multitude of oppositely directed gas jets impinging on the respective surfaces of said strip, the inlet temperature of said gas being below about 100°F.

3,841,923
FLUX FOR ACCOMPLISHING WELDING-TYPE ELECTROSLAG PROCESS

Daniil Andreevich Dudko, pereulok, Mechnikova, 3, kv. 7; Nikolai Yakovlevich Scherbina, ulitsa Gorkoya, 98, kv. 15; Igor Ivanovich Suschuk-Sljusarenko, ulitsa Vyborgshova, 80/17, kv. 94; Anatoly Ivanovich Chvertko, bulvar Lesi-Ukrainki, 2, kv. 39; Viktor Mikhailovich Khrundzhe, bulvar Likhacheva, 3, kv. 72, and Nikolai Konstantinovich Bizik, ulitsa Geroev-sevastopolya, all of Kiev, U.S.S.R.

Continuation of Ser. No. 157,717, June 28, 1971, abandoned.
This application Dec. 18, 1972, Ser. No. 316,395
Int. Cl. B23k *35/34*
U.S. Cl. 148—26 1 Claim

1. A flux for performing an electroslag process of the types including, welding, building up and remelting, containing, in percent by weight:

boron oxide: 10–20
potash: 15–20
melted borax: 10–20, up to 5 percent by weight of cryolite, and sodium fluoride being the balance.

3,841,924
METHOD FOR PRODUCING A HIGH MAGNETIC FLUX DENSITY GRAIN ORIENTED ELECTRICAL STEEL SHEET

Akira Sakakura; Fumio Matsumoto, and Kiyoshi Ueno, all of Eukuoka-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,876
Claims priority, application Japan, Apr. 5, 1972, 47-34051
Int. Cl. H01f *1/04*
U.S. Cl. 148—111 1 Claim

1. A method for producing a high magnetic flux density grain oriented electrical steel sheet comprising a step of hot rolling a continuously cast slab containing not more than 0.085 percent of carbon, 2.0–4.0 percent of silicon and 0.010–0.065 percent of acid-soluble aluminum, a step of annealing the hot rolled steel sheet at a temperature between 950° and 1,200°C and rapidly cooling the steel sheet to precipitate AlN, subjecting the steel sheet to a one-stage cold rolling at a reduction rate betwen 81 and 95 percent to obtain a final sheet thickness, a step of decarburization annealing of the cold rolled steel sheet, and a step of final annealing, said continuously cast slab being 150 to 600mm thick, and being heated at a temperature below 1,300°C and subjected to a break-down rollong at a reduction rate between 30 and 70 percent in the slab thickness direction before the hot rolling step, more than 80 percent of the grains of the slab after the reheating for hot rolling being less than 25mm in average grain diameter.

3,841,925
MAGNESIUM OXIDE STEEL COATING COMPOSITION AND PROCESS

John F. Steger, Crystal Lake, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Sept. 12, 1973, Ser. No. 396,346
Int. Cl. C22c *39/46;* B23b *15/04;* H01f *1/04*
U.S. Cl. 148—113 10 Claims

1. A magnesium oxide composition for coating silicon-containing steel sheet, said composition comprising a major proportion of a sintered magnesia having a citric acid activity of from about 30 to about 85 seconds and a pore volume of from about 0.02 to about 0.1 cc. per gram, and based on said magnesium oxide:

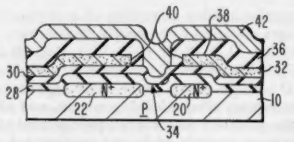
I. a chloride contributor selected from the group consisting of magnesium chloride, barium chloride and chromous chloride, said chloride contributor providing from about 4×10^{-8} to about 60×10^{-8} moles of chloride ion per square centimeter of steel surface; and

II. sodium metasilicate in a concentration at least about stoichiometrically equal to said chloride contributor.

3,841,926
INTEGRATED CIRCUIT FABRICATION PROCESS

Richard Raymond Garnache, South Burlington, and William Michael Smith, Jr., Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,394
Int. Cl. H01l *7/34*
U.S. Cl. 148—188 14 Claims



1. An integrated circuit fabrication process, which comprises:

A. depositing a first oxide layer containing a desired dopant on a semiconductor substrate,
B. removing the first oxide from all areas of the substrate except where a diffusion of the dopant is desired,
C. thermally growing a second oxide layer over the substrate and remaining portions of the first oxide layer, simultaneously diffusing the desired dopant from the first oxide into areas of the substrate beneath the remaining first oxide,
D. removing the first and second oxide layers from the substrate,
whereby a step is formed around the diffusions to facilitate mask alignment for subsequent process steps, and
E. carrying out further process steps to complete the integrated circuit.

3,841,927
ALUMINUM METAPHOSPHATE SOURCE BODY FOR DOPING SILICON

Jack M. Florence, and William E. Smith, both of Sylvania, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

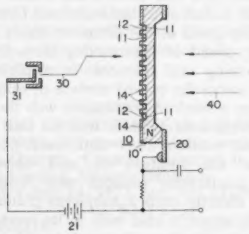
Filed Nov. 10, 1972, Ser. No. 305,548
Int. Cl. H01l 7/44
U.S. Cl. 148—189 **13 Claims**

1. A method for manufacturing a semi-conductor silicon wafer comprising the steps of contacting at least a portion of the surface of a silicon wafer with P_2O_5 vapors at an elevated temperature sufficient to permit the reaction of the P_2O_5 vapor with at least a portion of the surface of the silicon wafer and for a sufficient period of time to permit the diffusion of phosphorous into at least a portion of the surface of the silicon wafer, wherein the source of the P_2O_5 vapor is solid aluminum metaphosphate.

3,841,928
PRODUCTION OF SEMICONDUCTOR PHOTOELECTRIC CONVERSION TARGET

Iwao Takemoto, 3-1 Higashikoigakubo, Kokubunji-shi, Tokyo-to; Ichiro Miwa, 1699, Tamagawa-cho, Setagaya-ku, Tokyo-to, and Takashi Tokuyama, 3-3-102-303, Hibarigaoka,, Hoya-shi, Tokyo-to, all of Japan

Division of Ser. No. 44,015, June 8, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 305,675
Claims priority, application Japan, June 6, 1969, 44-44010
Int. Cl. H01l 7/44
U.S. Cl. 148—190 **10 Claims**

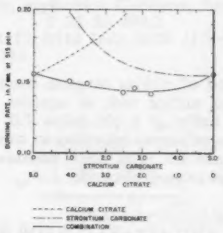


1. A method of making a semiconductor photoelectric conversion target comprising the steps of:
a. preparing a semiconductor substrate of a first conductivity type, which has one major surface;
b. forming a first insulating layer including a first impurity of the first conductivity type of predetermined concentration on the major surface of said substrate;
c. depositing a second insulating layer over said first insulating layer;
d. making apertures in array fashion in said two insulating layers to expose desired surface portions of the semiconductor substrate through said apertures;
e. diffusing a second impurity of a second conductivity type opposite to said first conductivity type into the substrate from said exposed surface thereof through the apertures, whereby an array of second conductivity regions is formed by said diffusion of the second impurity into said major surface thereof and a high impurity concentration layer of said first conductivity type is simultaneously formed by diffusion of said first impurity included in said insulating layer into the surface of the substrate beneath said insulating layers during the diffusion of the second impurity; and
f. providing a signal electrode to said substrate so as to apply a desired potential to said substrate.

3,841,929
SOLID PROPELLANT CONTAINING STRONTIUM CARBONATE-CALCIUM CITRATE BURNING RATE DEPRESSANT

John M. Craig, Waco, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed July 12, 1963, Ser. No. 294,812
Int. Cl. C06d 5/06
U.S. Cl. 149—17 **9 Claims**

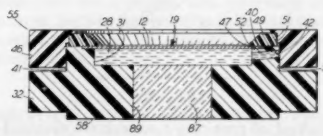


1. A solid propellant matrix having therein the combination of calcium citrate and strontium carbonate in sufficient quantity to reduce the burning rate of the propellant.

3,841,930
FLUIDIC MASKING

Harold Arthur Hetrich, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original application June 7, 1971, Ser. No. 150,345, now Patent No. 3,701,705. Divided and this application Aug. 16, 1972, Ser. No. 281,261
Int. Cl. H01l 7/50
U.S. Cl. 156—16 **4 Claims**



1. A method of masking a workpiece having a face and backside, comprising:
depositing a fluid in a cavity of a device;
positioning the face of the workpiece on the fluid to leave no space between the face of the workpiece and the fluid; and

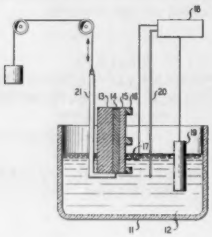
retaining the workpiece in the cavity with an apertured member, whereby the face and a portion of the backside of the workpiece opposite the face are masked by the fluid and the member.

3,841,931

MILD ACID ETCH FOR TUNGSTEN

Donald Morley MacArthur, Berkeley Heights, and Peter Kenny Skurkiss, Bloomfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed July 23, 1973, Ser. No. 381,984
Int. Cl. C23b *3/02*; C23f *1/00*
U.S. Cl. 156—18 **7 Claims**



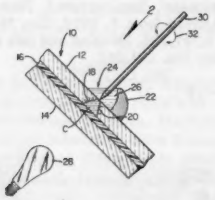
1. A method of etching tungsten comprising contacting a tungsten surface with an aqueous solution of an organic acid buffer at a pH below 7.0 while exposing said surface to an agency providing an oxidation potential between 0.1 and 0.6 volts when measured with respect to the saturated calomel electrode.

3,841,932

METHOD AND APPARATUS FOR REPAIRING CRACKS IN WINDSHIELDS

C. Richard Forler, 7642 S. Ames Way, Littleton, Colo. 80123, and Conrad F. Heins, 1310 S. Race St., Denver, Colo. 80210

Filed Apr. 16, 1973, Ser. No. 351,540
Int. Cl. B32b *35/00*
U.S. Cl. 156—94 **8 Claims**



1. A method of repairing a windshield disposed in upright position, the windshield being of the type having front and rear glass panels secured together by an intermediate plastic lamination, the front panel having a crack of generally conical form with air therein, the apex of the cone being adjacent the exposed surface of the front panel and the base of the cone being disposed adjacent the lamination, the apex also forming a small indentation in the front panel, comprising the steps of:

(a) applying a dam of pliable moldable material to the front panel to form a liquid reservoir with an open top and adapted to have a liquid level therein to permit the liquid to flow into the highest point of the crack and through which open top and liquid within the reservoir the crack may be observed,

(b) filling said reservoir to said level with a relatively low viscosity liquid pre-polymer polymerizable by actinic radiation to form a transparent polymer product,

(c) applying pressure with a hand-held pointed probe to the apex of the cone in a direction normal to its base, applying like pressure angularly to its base in all angular positions therearound and continuously changing directions to thereby cause the cone to gyrate within its surrounding crack,

(d) observing the cracked locus through the liquid in the reservoir until the cracked locus is invisible, and

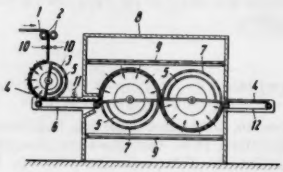
(e) applying actinic radiation to the locus of the crack until the pre-polymer polymerizes and hardens.

3,841,933

PROCESS AND APPARATUS FOR THE PRODUCTION OF CONTINUOUS RANDOM WEBS

Heinz Fleissner, Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Continuation of abandoned application Ser. No. 802,975, Feb. 27, 1969. This application Aug. 24, 1972, Ser. No. 283,298
Claims priority, application Germany, Feb. 28, 1968, P 16 35 727.0
Int. Cl. D04h *3/03, 3/10, 3/12*
U.S. Cl. 156—148 **14 Claims**



1. A process for the production of a continuous random web of continuous endless filaments which comprises feeding a plurality of individual continuous endless filaments downwardly by free fall onto the curved rotating surface of a first sieve drum means subjected to a suction draft sufficient to maintain said filaments thereon, the feeding speed of the filaments being higher than the conveying speed of the rotating sieve drum means, thereby depositing said filaments in a plaited, random arrangement across the curved surface of said sieve drum means to form a random continuous web thereon, maintaining the continuous random web on said curved surface with said suction draft until said web is turned over by the the rotation of said curved surface, passing the continuous random web from the sieve drum means directly onto a subjacent planar conveying surface which supports said web in its random arrangement and which introduces the random web into a heated treatment chamber and onto a curved rotating surface of a second sieve drum means subjected to a suction draft sufficient to maintain said web in its random arrangement thereon, said conveying surface extending in a horizontal plane located between said curved surfaces, the suction draft applied to the curved surface of the first sieve drum means being interrupted immediately prior to passing the continuous random web from the first sieve drum means whereby said random web is released in its random arangement onto said planar conveying surface, applying a bonding agent to said endless filaments

before the random web enters siad heated chamber, drawing a heated gaseous treatment medium through the random web on the curved surface of said second sieve drum means to consolidate and bond the web in its random arrangement and thereafter removing said consolidated and bonded web of continuous endless filaments from the treatment chamber.

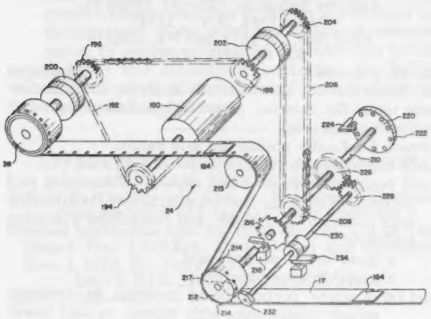
3,841,934
METHOD OF SPLICING AND IDENTIFYING A WEB

Robert S. Rosborough, Jr., and Luther M. Wright, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Application Mar. 18, 1971, Ser. No. 125,841, now Patent No. 3,725,168, which is a division of application Ser. No. 854,886, Sept. 3, 1969, now Patent No. 3,634,171. Divided and this application Jan. 5, 1973, Ser. No. 321,167

Int. Cl. B65h *19/00*

U.S. Cl. 156—157 **2 Claims**



1. The method of splicing and identifying two webs comprising the steps of aligning and holding two web ends in splicing relationship at an applicator station, presenting a web identifier to said applicator station, applying an indicia-bearing member first to said web identifier at said applicator station and then applying a corresponding indicia-bearing member to said web ends at said applicator station to splice them together, and after both said indicia-bearing members have been applied moving said web ends from said applicator station.

3,841,935
METHOD FOR FORMING A LAMINATE

Peter D. J. Dicks, Kitchener, Ontario, and William M. Hill, Ayr, Ontario, Canada, assignors to Spraymould (Bahamas) Limited, Nassau, Bahamas

Filed July 14, 1972, Ser. No. 271,903

Int. Cl. B31f *1/28*

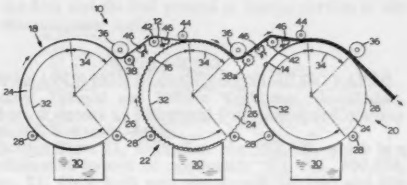
U.S. Cl. 156—210 **3 Claims**

1. A method of forming a laminate consisting of at least two webs of plastics material comprising the steps of

(a) forming a first web having a first laminating surface by applying an electrically charged powdered plastics material to a mold and heating the powdered plastics material to fuse the powdered plastics material to form a continuous web on the mold,

(b) forming a second web having a second laminating surface by applying an electrically charged powdered plastics material to a mold, heating the powdered plastics material to fuse the powdered plastics material to form a continuous web on the mold, and

(c) placing said laminating surfaces in engagement with one another and cooling the webs while maintaining the laminating surfaces in engagement with one another to bond the laminating surfaces to one another and thereby form said laminate.



3,841,936
METHOD OF SEALING OPEN-ENDED ENVELOPES FOR PHOTOGRAPHIC FILM OR THE LIKE

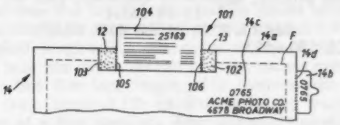
Berthold Fergg and Wolfgang Zahn, Munich, and Friedrich Hujer, Grunwald, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 27, 1972, Ser. No. 248,126

Claims priority, application Germany, Apr. 30, 1971, P 21 21 499.3

Int. Cl. B31d *1/02*; B32b *31/04*

U.S. Cl. 156—216 **4 Claims**



1. A method of sealing open-ended envelopes for photographic film and/or photographic prints with labels of the type having an adhesive-coated first portion, a non-adherent second portion and an elongated weakened portion extending between the first and second portions, comprising the steps of applying data to one side of the second portion of a label; providing said first portion with a fold line so that said first portion includes two parts located at opposite sides of said fold line; bonding the first portion of such label to an envelope so that the first portion forms a closure for the open end thereof, said bonding step including pressing the two parts of the first portion so as to adhere them to the opposite exposed sides of the envelope at the open end thereof to thus confine the contents of the envelope; and separating the second portion from the first portion along the weakened portion of the label while the first portion continues to confine the contents of the envelope.

3,841,937
PREPARATION OF PLASTIC-METAL PRODUCTS INCLUDING LAMINATES, COMPOSITE TUBES AND THE LIKE

Ransome W. Erwin, Houston, Tex., assignor to Austral-Erwin Engineering Co., Houston, Tex.

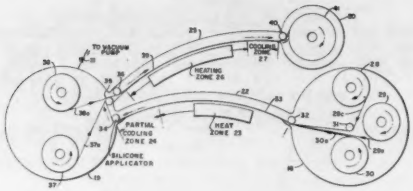
Continuation of abandoned application Ser. No. 41,375, May 28, 1970. This application Dec. 1, 1972, Ser. No. 311,137

Int. Cl. B29c *17/00*

U.S. Cl. 156—286 **31 Claims**

1. The method of adhering a preformed continuous pliable film of polymeric fluorocarbon plastic material

to a metal surface which comprises heating a layer of the plastic material, superposed upon a metal surface lamina in an environment of reduced atmospheric pressure, sufficiently to soften the plastic film and bond the same to the metal surface without application of compressive pressure to the outer surface of the plastic film, to form a bonded metal-plastic laminate without entrapment of air.

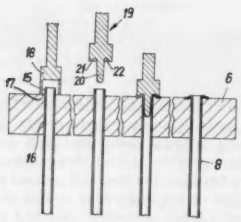


3,841,938

METHOD OF FORMING HEAT EXCHANGER

Werner Grosse-Holling, 50a Von-Moller-Strasse, D–4812 Brackwede, Germany; Jobst Hapke, 64 Tulpenweg, D–468 Wanne-Eickel, Germany; Wilhelm Hohenhinnebusch, 50 Zur Wollenbok, D–43 Essen-Heidhausen, Germany; and Helmut Schreiber, 67 Cranachstrasse, D–43 Essen, Germany

Filed Jan. 26, 1973, Ser. No. 326,751
Claims priority, application Germany, Jan. 29, 1972, P 22 04 167.4
Int. Cl. B32b *31/00*; B29c *19/00*
U.S. Cl. 156—293 2 Claims



1. A method of making a heat exchanger comprising a distributing container with a first tube connecting plate, a collecting container with a second tube connecting plate, and a nest of tubes interconnecting said tube connecting plates and thereby said containers, which includes the steps of: preparing two tube connecting plates of synthetic material with bores therethrough, preparing a nest of unheated tubes of synthetic material, heating the marginal areas of the bores in said tube connecting plates to welding temperature, slightly conically widening the bores in said tube connecting plates so that the bores of each tube connecting plate will taper toward the intended inside of the container pertaining to the respective tube connecting plate, inserting one end of the tubes of the nest of tubes, into the heated bores of one of said tube connecting plates and subsequently widening the said tube ends in conformity with the respective cone while welding the last mentioned tube ends to said last mentioned tube connecting plate, thereafter inserting the other end of said nest of tubes into the bores of the other tube connecting plate, and then widening the last mentioned tube ends in conformity with the cone of the bores of said last mentioned tube connecting plate while welding said last mentioned tube ends to said last mentioned tube connecting plate.

3,841,939

METHOD OF BONDING URETHANE ELASTOMERS

Basil P. Gray, Negley, Ohio, assignor to Commercial Shearing, Inc.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,103
Int. Cl. C09j *5/00*; B32b *27/40, 27/38*
U.S. Cl. 156—330 8 Claims

1. The method of pressure-bonding together bodies of urethane elastomers incorporating an aniline derivative comprising applying to at least one of the bonding surfaces a dilute aqueous solution of polyethylene oxide resin having a molecular weight of at least several hundred thousand, and holding the bonding surfaces together under pressure.

3,841,940

APPARATUS FOR APPLYING ADVERTISING BANDS ON CYLINDRICAL CONTAINERS

Anthony Rubinichi, 103—33 102nd St., Ozone Park, N.Y. 11417

Filed Nov. 29, 1972, Ser. No. 310,370
Int. Cl. B32b *31/00*
U.S. Cl. 156—367 14 Claims

1. Apparatus for automatically applying identification bands upon the external peripheral surface of product containers comprising

means for fixedly positioning said bands,

said bands being of the distendable type,

said positioning means being capable of receiving said product containers in predetermined relationship with respect to said bands, and comprising a housing including

a fixed lower portion, and

a movable upper portion,

said upper portion being movable in predetermined relationship with respect to said lower portion,

said positioning means also including a source of vacuum,

means for connecting said vacuum source to said housing,

said vacuum source being operable upon the application of a band to the lower housing portion to open said distendable band to a predetermined geometrical configuration,

said upper housing portion being operable after the initial opening of said band to move upwardly to cause distention of said band, and

releasing means operable to deactivate said vacuum source to cause said band to return to its undistended state and in conformal engagement with said product container outer peripheral surface.

3,841,941

APPARATUS FOR SERVICING A TIRE BUILDING MACHINE

Jean Leblond and Guy Danneels, Compiegne, and Maurice Lambert, Machemont, France, assignors to Uniroyal, Neuilly-sur-Seine, France

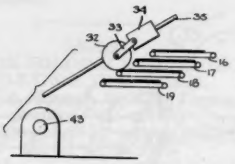
Filed Sept. 1, 1972, Ser. No. 285,954
Claims priority, application France, Sept. 9, 1971, 7132573
Int. Cl. B29h *17/02, 17/14*
U.S. Cl. 156—406 9 Claims

1. An apparatus for servicing a pneumatic tire building drum with tire building elements comprising

means for supplying a plurality of tire building elements;

a first plurality of conveying means for receiving a respective one of said tire building elements;

a second like plurality of conveying means juxtaposed adjacent the feed end of the first conveying means



for receiving each respective building element from a respective one of the first conveying means;

means for driving the first and second conveying means together;

means for selectively independently driving the second conveying means; and

a transfer means for receiving the tire building elements from the second conveying means, said transfer means including movable means for successively contacting each of the plurality of second conveying means to receive each of the respective tire building elements and successively contacting the building drum for application thereon of each of the respective tire building elements.

3,841,942

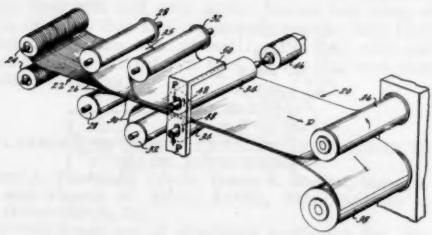
APPARATUS FOR FORMING A COMPOSITE METALLIC PREFORM TAPE

Robert G. Carlson and Carl A. Steinhagen, Cincinnati, Ohio, assignors to General Electric Company

Original application Apr. 12, 1971, Ser. No. 133,207, now Patent No. 3,719,538. Divided and this application Dec. 4, 1972, Ser. No. 311,814

Int. Cl. B32b *31/06, 31/20;* **B65h** *54/00*

U.S. Cl. 156—436 **3 Claims**



1. Apparatus for continuously producing metallic preform tape comprising:

first supply means for providing a pair of substantially continuous metallic foils, each foil having an inner and an outer surface;

means to move each of the pair of foils at a given rate in a given direction;

second supply means for providing a plurality of substantially continuous filaments;

means for aligning each of the filaments in a single plane disposed between the pair of metallic foils;

means to move each of the filaments at a given rate in the given direction;

third supply means for providing at least one substantially continuous, plastically deformable, strippable film along at least one foil outer surface;

means to move the film at the given rate in the given direction; and

pressing means to press concurrently the film and foil toward and in contact with the filaments with a pressing force sufficient to deform plastically both the film and the foil around at least a portion of the filament outer surface.

3,841,943

APPARATUS FOR MAKING SYNTHETIC PAPER

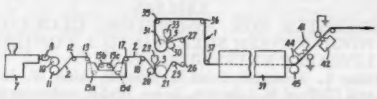
Masanori Takashi and Mitsuo Yoshiyasu, Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Application Nov. 11, 1971, Ser. No. 197,757, which is a continuation-in-part of application Ser. No. 809,629, Mar. 21, 1969, both now abandoned. Divided and this application Apr. 11, 1973, Ser. No. 350,166

Claims priority, application Japan, Mar. 26, 1968, 43/19,204

Int. Cl. B29b *3/02;* **B32b** *31/00*

U.S. Cl. 156—494 **1 Claim**



1. Apparatus for manufacturing a paper-like laminate comprising, in combination, first extruder means extruding a base film layer made of a thermoplastic resin, first heating means for heating the extruded thermoplastic resinous base film layer, first stretching means stretching the base film layer longitudinally about at least 1.3 times its original longitudinal dimension to orient the resin of said base film layer, second extruder means extruding a paper like film layer made of a thermoplastic resin having from about 0.5% to about 65% by weight of particles of a fine inorganic filler dispersed therein substantially uniformly, said particles being no less than 0.3 microns in diameter, laminating means laminating the paper-like film layer on the base film layer to form a laminate, second stretching means stretching the laminate transversely at least 2.5 times its transverse dimension to develop stresses in conjunction with said filler particles effective to develop microvoids in said paper-like film layer which open to a surface thereof free of said base layer and microvoids internally thereof distributed with fiber-like portions of the resin among the microvoids interiorly of the paper-like film layer to define therein a cellular fibrous structure.

3,841,944

WEB SPLICING APPARATUS

William W. Harris, Jr., Turnersville, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

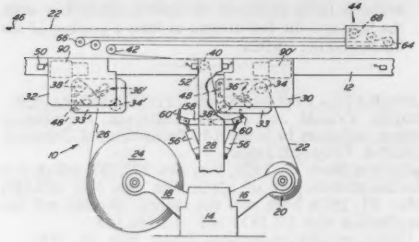
Filed June 26, 1973, Ser. No. 373,721

Int Cl. B65h *19/08*

U.S. Cl. 156—504 **5 Claims**

1. Apparatus for splicing a web from a reserve roll to a web of a supply roll comprising means for supporting a reserve roll and a supply roll, a frame associated with said supporting means and at an elevation thereabove, first and second carriages movably supported by said frame for movement toward and away from each other, each carriage including at least one idler roller around which a web from one of the rolls may extend, an accumulation means for accumulating a supply of a web fed from one of the rolls, means supported by said frame independently of and below an anvil on said first carriage to sever the web being fed, and means on the second carriage for selectively moving the leading edge

of a web from a reserve roll relative to said second carriage into contact with and for securement to the web being fed substantially at the same time the web being fed is severed.

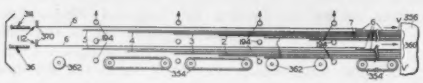


3,841,945

APPARATUS FOR ASSEMBLING GLUE-COATED WOOD VENEER SHEETS INTO A CONTINUOUS LINEARLY EXTENDING STACK

Arthur L. Troutner, John R. Russell, Alan W. Johnson, and Clifford R. Johnson, Boise, Idaho, assignors to Trus Joist Corporation, Boise, Idaho

Filed June 1, 1972, Ser. No. 258,898
Int. Cl. B32b *31/04;* **B65h** *9/00*
U.S. Cl. 156—538 **22 Claims**



1. Apparatus for assembling sheets of material into a continuous, linearly extending stack comprising:

(a) lineal conveyer means,

(b) means for arranging a first stack of sheets above the conveyer with the sheets progressively lapped by predetermined increments in the direction of movement by the conveyer,

(c) means for depositing the bottom-most sheet of the stack on the conveyer,

(d) drive means connected to the conveyer for advancing it stepwise in predetermined linear travel increments, and

(e) sheet placement means arranged for placing the first sheet of a second stack on the conveyer with its leading end lapping the trailing end of the sheet from the first stack already deposited thereon.

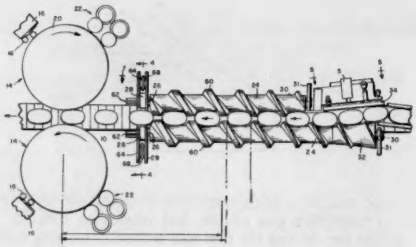
3,841,946

HELICAL FEED SCREWS FOR CONTAINER PROCESSING MACHINERY

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Filed Dec. 18, 1972, Ser. No. 315,795
Int. Cl. B65c *9/06*
U.S. Cl. 156—566 **13 Claims**

1. Apparatus comprising in combination with a station at which there are instrumentalities for applying labels to containers, a conveyor for moving the containers to the station and a pair of spaced parallel side-by-side helical screws supported above the conveyor for rotation about horizontal axes in longitudinally spaced fixed bearings, the helices of said screws cooperating to arrange the containers on the conveyor at a predetermined spacing as they travel along with the conveyor, drive means common to both screws for effecting rotation thereof in the same direction, first manually operable means connected with said common drive means operable to rotatably adjust the helices of the screws in consonance about their axes relative to said station and second manually operable means connected with said common drive means operable to rotatably adjust the helices of one of the screws relative to the other.

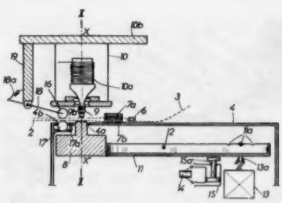


3,841,947

METHOD AND APPARATUS FOR CONTINUOUS WELDING OF PLASTICS SHEETS, IN PARTICULAR FOR USE IN THE MANUFACTURE OF EXPLORATORY BALLOONS

Maurice Henri Bocquet, Massy, and Michel Chatain, Bourg-la-Reine, France, assignors to Centre National d'Etudes Spatiales, Paris, France

Continuation of abandoned application Ser. No. 868,559, Oct. 22, 1969, which is a continuation-in-part of application Ser. No. 626,595, Mar. 28, 1967, now Patent No. 3,533,865. This application Mar. 20, 1972, Ser. No. 236,330
Claims priority, application France, Oct. 24, 1968, 171,293
Int. Cl. B32b *31/08, 31/16*
U.S. Cl. 156—580 **6 Claims**



1. A device for continuously ultrasonically welding together overlapping edges of very thin films of thermoplastic material, comprising a first operative component in the form of an anvil, a second operative component in the form of an ultrasonic welding head with a welding tool opposite and adjacent said anvil, said operative components being movable relative to each other towards and away from each other, means for guiding said edges in overlapping longitudinal relation between said operative components, yieldable clamping means responsive solely to gravity for continuously and flexibly urging one of said operative components towards the other with a constant force in order to uniformly and continuously clamp the overlapping edges between said operative components, means for continuously supplying power to said welding tool in order to weld together the clamped overlapping edges, an enclosure in which said power supply means is

housed, means for circulating coolant liquid through said enclosure and over said power supply means immersed therein to keep the temperature of said tool constant, and drive means for continuously driving at uniform speed the welded overlapping edges longitudinally away from said operative components.

3,841,948
STAND FOR HOLDING AND PROTECTING FLEXIBLE TRASH BAGS
Lauri A. Stenwall, 28 White Terrace, Ramsey, N.J. 07446
Filed Mar. 15, 1973, Ser. No. 341,366
Int. Cl. A47g *29/00*
U.S. Cl. 161—23 **8 Claims**

1. An outdoor stand for holding flexible trash bags at elevated position for ready collection thereof, comprising in combination:

an elevatable standard securable at the base end thereof to the ground;

a plurality of receiving hooks at the upper end of said standard for receiving flexible cords secured about and closing the necks of said trash bags; and

a plurality of artificial shrubbery branches secured to at least the lower portions of said standard, and extending in generally radial fashion therefrom, to render said stand imitative of a natural plant object, and to protect and repel animals from the periphery of said stand, to thereby protect suspended trash bags.

3,841,949
COMPOSITE FRICTION PLATE
James W. Black, Roscoe, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Oct. 25, 1972, Ser. No. 300,501
Int. Cl. B32b *5/16, 25/02;* **F16d** *13/60, 69/00*
U.S. Cl. 161—42 **5 Claims**

1. A friction plate comprising a flat steel core having plane, parallel outer surfaces at its opposite sides; a flat coating of heat resistant synthetic rubber bonded to each of said outer surfaces of said core, said coatings presenting plane outer surfaces, respectively, parallel to said outer surfaces of said core; and two layers of sintered metal particles, one layer embedded in one of said coatings flush with said outer surface thereof and being of less thickness than said one coating; and the other layer embedded in the other of said coatings flush with said outer surface thereof and being of less thickness than said other coating.

3,841,950
GLASSES AND GLASS-CERAMICS AND PRODUCTS MADE THEREFROM
Jerry L. Planchock, Toledo, Daniel R. Stewart, Maumee, and Thomas W. Brock, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Continuation-in-part of abandoned application Ser. No. 146,664, May 25, 1971. This application Feb. 28, 1972, Ser. No. 229,959
Int. Cl. B32b *5/12*
U.S. Cl. 161—55 **6 Claims**

1. In a recuperator matrix comprising an assembly of integrally fused tubes arranged in a plurality of layers of tubes superimposed one above the other in successive parallel planes, the tubes within each plane being essentially parallel to each other and transverse to the tubes in adjacent layers, the tubes in each layer forming a series of longitudinal parallel passageways through the matrix, wherein the walls of said passageways

(1) have essentially zero porosity, and

(2) consist essentially of an inorganic crystalline oxide ceramic material, and

wherein the inner diameter of said passageways is at least 3 times the wall thickness through portions of said walls common to adjacent fused tubes, wherein the open frontal or cross-sectional area of each face of the matrix containing passageways is at least 32 percent of the cross-sectional area across such face,

the improvement whereby such recuperator matrix can withstand temperatures of 1500° F. for at least 1000 hours and said matrix will have a dimensional stability of less than 250 p.p.m. and will retain its strength, comprising having said inorganic crystalline oxide ceramic material of said matrix consist essentially of the glass-ceramic formed by thermally in situ crystallizing a glass consisting essentially of the following ingredients:

Ingredients:	Weight percent
SiO_2	52–78.4
Al_2O_3	12.8–27.5
Li_2O	2.4–7
ZnO	0.25–6.7
Nucleating agent	3–9

Wherein said nucleating agent is selected from the group consisting of TiO_2, ZrO_2 and a mixture of TiO_2 and ZrO_2 and when said nucleating agent is TiO_2, it is present in an amount of at least 3.2 percent and when said nucleating agent is ZrO_2 or the mixture, the ZrO_2 is present in an amount not in excess of 3% by weight, wherein the

$$ZnO+Li_2O/Al_2O_3$$

molar ratio is ≤ 1, and wherein the SiO_2/Al_2O_3 molar ratio is from 4 to 9 and

(a) when the SiO_2/Al_2O_3 molar ratio is from 4 to less than 5, the Li_2O/Al_2O_3 molar ratio is from 0.55 to 0.91, and the ZnO/Li_2O molar ratio is from 0.06 to 0.5;

(b) when the SiO_2/Al_2O_3 molar ratio is from 5 to 8, the Li_2O/Al_2O_3 molar ratio is from 0.55 to 0.93, and the ZnO/Li_2O molar ratio is from 0.04 to 0.5;

(c) when the SiO_2/Al_2O_3 molar ratio is from more than 8 up to 9, the Li_2O/Al_2O_3 molar ratio is from 0.8 to 0.93, and the ZnO/Li_2O molar ratio is from 0.04 to 0.5; and

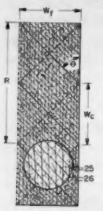
(d) the glass and resulting glass-ceramic contains in weight percent no more than 0.2 K_2O, or 0.2 Na_2O, or 0.2 (Na_2O+K_2O),

said glass-ceramic having a coefficient of linear thermal expansion of -12 to $+12\times10^{-7}$ (0–700° C.).

3,841,951
NONWOVEN FABRICS
Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Application Dec. 16, 1969, Ser. No. 885,595, now Patent No. 3,713,942, which is a continuation-in-part of application Ser. No. 843,561, July 22, 1969, now Patent No. 3,705,070. Divided and this application Oct. 10, 1972, Ser. No. 296,374
The portion of the term of the patent subsequent to Dec. 5, 1989, has been disclaimed
Int. Cl. D04h *3/14*
U.S. Cl. 161—57 **3 Claims**

1. A nonwoven fabric comprising a first open network having a plurality of substantially parallel continuous synthetic thermoplastic polymer monofilaments in a single layer in spaced apart side-by-side relationship with adjacent monofilaments being interconnected by a plurality of fibrils, and a second open network having a plurality of substantially parallel continuous synthetic thermoplastic polymer monofilaments in a single layer in spaced apart side-by-side relationship with adjacent monofilaments being interconnected by a plurality of fibrils, said second network being cross-laid on at least one surface of said first network so that the plurality of

monofilaments of said second network are disposed at an angle of 90° to the plurality of monofilaments of said first network, said first plurality of monofilaments being bonded to said second plurality of monofilaments at their



cross-over points to form a multi-layer nonwoven fabric, each layer of which has a uniform thickness substantially equal to the thickness of a single monofilament in said layer.

3,841,952
FUSIBLE INTERLINING

Ryuichi Kimura, Kyoto, Kiyoshi Fukui, Uji, Takuo Mortimoto, Kyoto, Takashi Higuchi, Hikone, and Katsuyoshi Yamauchi and Zenji Yoshida, Moriyama, Japan, assignors to Firma Carl Freudenberg, Hohnerweg, Germany

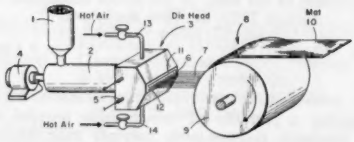
No Drawing. Filed Mar. 19, 1973, Ser. No. 342,916
Claims priority, application Japan, Mar. 21, 1972, 47/28,370
Int. Cl. A41d *27/02*
U.S. Cl. 161—88 **14 Claims**

1. In a fabric fusible interlining with terpolymeric resin as a thermoplastic adhesive, the improvement wherein 100% of the terpolymer consists of 3 to 30% by weight styrene, 20 to 40% by weight acrylonitrile, 20 to 77% by weight alkylacrylate having C_1–C_4 alkyl radical, said terpolymer having an intrinsic viscosity in the range between 0.3 and 0.7 dl./g. determined in dimethylformamide at 30° C. and melting in the range of 60 to 150° C.

3,841,953
NONWOVEN MATS OF THERMOPLASTIC BLENDS BY MELT BLOWING

Dwight Theodore Lohkamp, Baytown, Tex., and James S. Prentice, Shorewood, Ill., assignors to Esso Research and Engineering Company

Filed Mar. 3, 1972, Ser. No. 231,521
Int. Cl. D04h *3/14*
U.S. Cl. 161—150 **7 Claims**

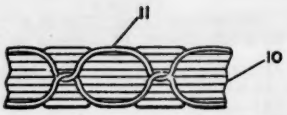


1. A nonwoven mat which comprises solely of:
a plurality of randomly dispersed superfine discontinuous fibers which fibers have been prepared from a melt-blowing process in which two or more components, one of which is a thermoplastic fiber-forming resin, are blended together, extruded in their molten state through a row of die openings in a die head, contacted with stream of hot gas at said die head in order to attenuate the extruded resin in a direction away from the die openings to form fibers and collecting said fibers at a distance between from 1 to 30 inches from the die openings, said fibers having average diameters of from 0.5 to 5 microns, wherein each fiber comprises a blend of a major portion of said fiber-forming thermoplastic resin and at least one other component selected from the group consisting of dyes suitable for coloring said blend, non-fiber forming thermoplastic resins and combinations of the foregoing, wherein said blend comprises not more than 10 wt. percent of said dyes based on the total blend, wherein said mat is free of shot and rope and wherein said one other component is generally dissimilar in chemical properties from said fiber-forming thermoplastic resin.

3,841,954
COMPRESSED RIGID LAMINATED MATERIAL INCLUDING STITCHING REINFORCEMENT

Harry A. Lawler, Youngstown, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Original application Mar. 15, 1971, Ser. No. 124,079, now Patent No. 3,719,545. Divided and this application Dec. 4, 1972, Ser. No. 311,607
Int. Cl. B32b *7/08, 27/08;* **B29c** *27/00*
U.S. Cl. 161—50 **5 Claims**



1. A compressed rigid laminated material comprising multiple layers of initially flexible material and including stitching reinforcement with a heat shrunk filament, the layers of said flexible material having been compressed and rigidified, said rigid laminated material being reinforced and held in compression by said heat shrunk stitching.

3,841,955
PLASTICIZED POLYVINYL BUTYRAL INTERLAYERS

Antony W. M. Coaker, St. Louis, Joseph R. Darby, Webster Groves, and Thomas C. Mathis, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,152
Int. Cl. B32b *17/10;* **C08f** *45/36*
U.S. Cl. 161—199 **16 Claims**

1. An interlayer for laminated safety glass which comprises a compatible mixture of a polyvinyl butyral resin and a plasticizer wherein the plasticizer is a blend of (1) at least one phosphate plasticizer and (2) at least one adipate plasticizer; wherein the phosphate plasticizer corresponds to the following general formula:

$$R_3PO_4$$

wherein R is selected from the group consisting of aryl, alkaryl wherein the alkyl group contains from 1 to 3 carbon atoms, alkyl of from 1 to 12 carbon atoms, alkoxyalkyl of from 1 to 9 carbon atoms and cycloalkyl, with the proviso that when all of the radicals represented by R in a given compound are alkyl radicals each alkyl radical must have 4 or more carbon atoms; wherein the adipate plasticizer is selected from the group consisting

of dihexyl adipate and a C_7–C_9 adipate; wherein the phosphate plasticizer and the adipate plasticizer have vapor pressures of less than 10 millimeters (mm.) at 175° C.; and wherein the ratio of phosphate plasticizer to adipate plasticizer is in the range from 80:20 to 20:80.

3,841,956

BONDED WEATHER RESISTANT DECORATIVE LAMINATE WITH SLIGHTLY GRAINED ACRYLIC SURFACE

Salvatore E. Palazzolo, Hampton, S.C., and Richard R. Hetrick, Bainbridge, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 94,848, Dec. 3, 1970. This application Oct. 24, 1972, Ser. No. 300,006

Int. Cl. B32b *27/42*; C09j *5/02*

U.S. Cl. 161—248 9 Claims

1. A unitary, heat and pressure bonded weather resistant decorative laminated article comprising:

(a) a rigidity imparting core layer comprising a plurality of sheets impregnated with phenolic resin,

(b) a print sheet layer impregnated with aminotriazine-aldehyde resin bonded to the core layer, and

(c) a top methyl methacrylate protective sheet layer consisting essentially of methyl methacrylate homopolymers having average molecular weights from about 320,000 to 550,000, said protective sheet being a pre-formed film having a slightly grained surface before bonding, said slightly grained surface being directly bonded to said print sheet layer without the use of a separate adhesive layer, the slightly grained surface being effective to permit gas bleed off between the print sheet and the protective sheet during bonding of the article.

3,841,957

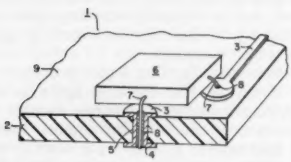
FILLED COMPOSITION AND ARTICLE CONTAINING PERFLUORINATED SURFACTANT

Gerhard R. Sprengling, Blairsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1972, Ser. No. 298,214

Int. Cl. B32b *15/08*, *15/04*

U.S. Cl. 161—186 9 Claims



1. An article comprising

(A) a flat board which comprises

(1) about 15 to about 70% of a hardened, synthetic, organic resin;

(2) about 30 to about 85% non-conductive filler; and

(3) about 0.001 to about 1.0% of a surfactant having a perfluorinated chain at least three carbon atoms long at one end and a polar group at the other end, said surfactant possessing the property of lowering the surface energy of said resin by freely migrating to the surface of said resin and to its interfaces with said filler after said resin is hardened; and

(B) a conducting circuit bonded to at least one side of said flat board.

3,841,958

REINFORCED STRUCTURAL ELEMENT AND METHOD OF MAKING THE SAME

Richard L. Delorme, 916 Pickett Lane, Newark, Del. 19711

Continuation-in-part of abandoned application Ser. No. 177,895, Sept. 2, 1971. This application Aug. 14, 1972, Ser. No. 280,532

Int. Cl. B32b *3/26*, *3/30*

U.S. Cl. 161—161 7 Claims

1. A structural member having a thickness dimension defined by opposite faces comprising:

an integral lattice-like framework of web-like elements formed of a rigid organic polymer plastic material defining voids,

a lightweight organic polymer foam material filling said voids and intimately bonded to said framework, and

a longitudinal portion of each of said elements extending continuously through the thickness dimension of said filling material.

3,841,959

INSULATING TAPE FOR THE MANUFACTURE OF AN INSULATING JACKET FOR ELECTRIC CONDUCTORS IMPREGNATED WITH A THERMOSETTING EPOXY RESIN-ACID ANHYDRIDE CURING MIXTURE

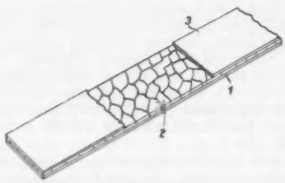
Willi Mertens, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,384

Claims priority, application Germany, Aug. 20, 1971, P 21 42 571.8

Int. Cl. B32b *5/16*

U.S. Cl. 161—163 16 Claims



1. An improvement in an insulating tape for the manufacture of an insulating jacket, said insulating tape being adapted for use on the winding conductors and coils of electric machines where said insulating tape is wound on said winding conductors and coils and then impregnated with a thermosetting epoxy resin-acid anhydride mixture, said insulating tape comprising:

(a) a flexible substrate;

(b) an areal, inorganic material of high dielectric strength applied to said substrate;

(c) a binder which cements said areal, inorganic material to said substrate;

(d) an accelerator in mixture with said binder, said accelerator acting to stimulate the curing reaction of the impregnating epoxy resin-acid anhydride mixture, said binder-accelerator mixture forming a self-curing system at the curing temperature of the im-

pregnating resin, using cycloaliphatic epoxy resins with an epoxy-equivalent weight of under 180, in which the epoxy groups have been produced through oxygen attachment at double bonds in the ring, said binder-accelerator mixture additionally comprising:

(e) adducts of vinyl cyclohexenedioxide and secondary amines, in which the secondary nitrogen atom is a member of a hydrogenated ring, with the molar ratio of 1:1; and

(f) adducts of vinyl cyclohexenedioxide and imidazoles not substituted in the 1-position, with a molar ratio of 1:1,

wherein said binder-accelerator mixture comprises about 60 to 80% by weight of said cycloaliphatic epoxy resin, about 19 to 39% by weight of said adduct of vinyl cyclohexenedioxide and secondary amines, and about 1 to 15% by weight of said adduct of vinyl cyclohexenedioxide and imidazoles.

3,841,960

LAMINATES BONDED WITH ADHESIVE OF AQUEOUS EMULSION OF INTERPOLYMER OF VINYL ACETATE, N-METHYLOL ACRYLAMIDE AND ACRYLIC ACID

John G. Iacoviello, Somerville, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Original application May 3, 1971, Ser. No. 139,828, now Patent No. 3,770,680. Divided and this application June 28, 1973, Ser. No. 374,403

Int. Cl. C08f *1/13, 29/42*

U.S. Cl. 161—251 **11 Claims**

1. A laminate comprising at least two superimposed layers of solid material bonded together by a cured adhesive comprising an aqueous emulsion of a thermosettable interpolymer of additively combined units of vinyl acetate, N-methylol acrylamide, and acrylic acid, said interpolymer containing about 5 to 20 weight percent of polymerized N-methylol acrylamide, about 1 to 3 weight percent of polymerized acrylic acid, and a balance consisting essentially of polymerized vinyl acetate, said emulsion containing about 40 to 60 weight percent of water, and said emulsion being substantially devoid of solid particles having a size larger than 150 mesh (U.S. Sieve Series).

3,841,961

METHOD FOR THE CARBONATION OF SULPHIDE-CONTAINING GREEN LIQUOR SOLUTIONS

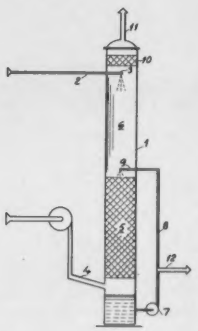
Erik Viktor Saiha, Heinola, Finland, assignor to Oy Tampella AB, Tampere, Finland

Continuation-in-part of abandoned applications Ser. No. 596,556, Nov. 23, 1966, and Ser. No. 62,098, Aug. 7, 1970. This application Dec. 27, 1971, Ser. No. 212,786

Int. Cl. D21c *11/00, 11/06*

U.S. Cl. 162—29 **2 Claims**

1. A method for the carbonation of sulphide-containing green liquor solutions obtained from the recovery systems of pulp mills using sodium base digestion comprising passing green liquor solution through an obsorption tower counter-currently to a flow of carbonation gas containing at least twice the amount of carbon dioxide that the green liquor is capable of absorbing feeding said carbonation gas into a lower portion of said tower packed with contact surface increasing packing, contacting said carbonation gas with said green liquor in said lower portion, said amount of gas being sufficient to convert the sulphide content of said solution to bisulphide, carbonate and bicarbonate while liberating a minor portion only of said sulphide content as hydrogen sulphide allowing unabsorbed carbon dioxide and said liberated hydrogen sulphide to pass upward into an unpacked upper portion of said tower, spraying further fresh green liquor solution from above so that fine droplets of green liquor solution contact the gases rising in the unpacked upper tower portion, selectively reabsorbing substantially all of said hydrogen sulphide in said fresh green liquor solution as bisulphide; maintaining a temperature favorable to the



reactions in the range of about 25° to 40° C.; removing carbonated solution from the tower.

3,841,962

HYDROGEN SULFIDE PRETREATMENT OF LIGNOCELLULOSIC MATERIALS IN ALKALINE PULPING PROCESSES

Alan R. Procter, North Vancouver, British Columbia, Garrick E. Styan, Burnaby, British Columbia, and Magnus G. Vinje, Nanaimo, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Continuation-in-part of abandoned application Ser. No. 276,853, July 31, 1972. This application May 21, 1973, Ser. No. 362,009

Claims priority, application Canada, Aug. 16, 1972, 149,799

Int. Cl. D21c *3/00, 11/12*

U.S. Cl. 162—30 **10 Claims**

1. In an alkaline pulping process in which lignocellulosic material is pre-treated with hydrogen sulfide, in which the pre-treated material is digested under heat and pressure in an alkaline digesting liquor comprising a sodium based digesting agent to form a pulp, in which the digested pulp is separated from the digesting liquor after digestion, and in which the digesting liquor is processed for recovery of the alkaline digesting agent, the improvement which comprises:

providing from the digesting liquor processed for recovery of the alkaline digesting agent, a high sulfidity liquor containing at least one member selected from the group consisting of sodium sulfide and sodium hydrosulfide and having a sulfidity of about 75% to 200% and a weight ratio of sulfur to sulfur plus sodium of from about 0.35–0.58;

contacting the lignocellulosic material with said high sufidity liquor in a pre-treatment vessel prior to alkaline digestion;

introducing carbon dioxide gas into said high sulfidity liquor in said vessel, in an amount in excess of stoichiometric to generate hydrogen sulfide from said high sulfidity liquor;

maintaining the temperature in said pre-treatment vessel within the range of about 120 to 165° C. for about 20 to 200 minutes and under a partial pressure of hydrogen sulfide gas of about 10 to 80 p.s.i. to effect reaction between hydrogen sulfide and the lignocellulosic material in said pre-treatment vessel to increase pulp yield over that obtained by an alkaline pulping process in which the lignocellulosic material is digested in said alkaline digesting liquor;

separating pre-treated lignocellulosic material from the

pre-treatment liquor present in said pre-treatment vessel;

separating hydrogen sulfide gas from the separated pre-treatment liquor; and

recycling at least a portion of said hydrogen sulfide gas separated from said pre-treatment liquor to said pre-treatment vessel for treatment of additional lignocellulosic material introduced thereto, whereby the need for adding make-up hydrogen sulfide for said pretreatment from an external source is eliminated.

3,841,963

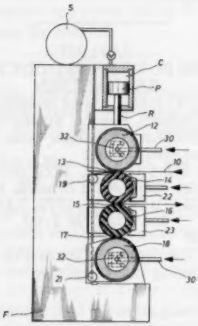
APPARATUS FOR SATINIZING FIBROUS WEBS

Jurgen Schlunke, Krefeld, Germany, assignor to Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung

Continuation-in-part of application Ser. No. 160,217, July 6, 1971, which is a continuation of application Ser. No. 878,772, Nov. 21, 1969, both now abandoned. This application May 3, 1973, Ser. No. 356,745

Int. Cl. B30b *3/04, 9/100;* **D21a** *1/00*

U.S. Cl. 162—362 **9 Claims**



1. A calender for satinizing fibrous webs directly with only two roller pairs arranged in a plane above each other in vertical alignment, comprising:

a first metallic satinizing roll, having a relatively hard rough surface for satinizing;

a first backup roll in first nip defining relationship with only said first metallic satinizing roll, having a resilient smooth surface comprising a synthetic material formed by polymerization of one or more materials;

a second metallic satinizing roll; having a relatively hard rough surface for satinizing;

a second backup roll in second nip defining relationship with only said second metallic satinizing roll, having a resilient smooth surface comprising a synthetic material formed by polymerization of one or more materials, and

fibrous web support means for continued feeding of said web first through said first nip in one direction of entry and thereafter through said second nip in substantially the same direction of entry, said first and second metallic satinizing rollers having uppermost and lowermost locations remote from each other and said first and second backup rollers directly adjoining each other in location intermedaite said first and second metallic satinizing rolls with looping angle amounting to 180° around one backup roll resulting in web exit in direction substantially opposite to direction of entry and alternately for continued feeding of said web in just the opposite way.

3,841,964

DEVICE FOR HANDLING THE ELEMENTS OF A NUCLEAR REACTOR CORE

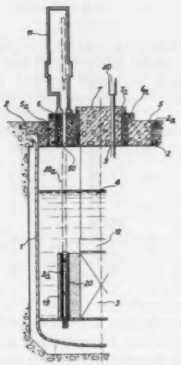
Raymond Dumayne, Paris, France, assignor to Commissariat a l'Energie Atomique, and Societe Creusot-Loire, both of Paris, France

Filed Jan. 15, 1973, Ser. No. 323,635

Claims priority, application France, Jan. 20, 1972, 7201863

Int. Cl. G21c *19/02*

U.S. Cl. 176—30 **5 Claims**



1. A device for handling the elements of a nuclear reactor core and comprising, mounted within a shield slab which closes the reactor core containment vessel, a first rotating plug of large diameter which is centered on the axis of said reactor core, a second rotating plug mounted eccentrically with respect to the axis of said first plug, and a third rotating plug mounted eccentically with respect to the axis of said second plug, the eccentric displacement of the second plug with respect to the first being equal to the eccentric displacement of the third plug with respect to the second plug so that when the first and third plugs are in coaxial relation, a core lid which is suspended beneath the third plug can be placed strictly above and in axial alignment with the reactor core during operation of the reactor, wherein the second and third plugs are provided through the shield slab with access openings to the interior of the containment vessel and wherein the second plug is fitted with a fourth rotating plug mounted eccentrically with respect to the axis of said second plug, said fourth plug being in turn provided with an excess opening to the interior of said containment vessel.

3,841,965

METHOD OF, AND APPARATUS FOR, SUPPORTING THE MODERATOR STRUCTURE OF A NUCLEAR REACTOR

Rolf Degen and Max Zimmermann, Untersiggenthal, Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Aug. 24, 1972, Ser. No. 283,286

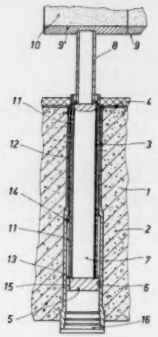
Claims priority, application Switzerland, Oct. 15, 1971, 15,096/71

Int. Cl. G21c *5/06, 5/10*

U.S. Cl. 176—87 **4 Claims**

1. A method of supporting the moderator structure in the reactor vessel of a gas-cooled graphite-moderated nuclear reactor having vertical adjacent columns composed of blocks, the columns resting on a sectional mounting plate the sections of which are supported by at least one support tube on the bottom of the reactor vessel,

according to which the support tubes pass through the bottom of the reactor vessel and are provided at the outer end with at least one plug which acts as a radiation shield and a cooling-gas seal, in which the support tube (8) is fixed in a sleeve tube (3) by means of a locking plate (5, 6) such that between the support tube (8) and the sleeve tube (3) there is an annular gap (11) containing an auxiliary tube (12) which is movable in the axial



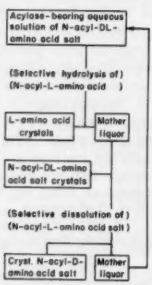
direction of the support tube (8) and which while the reactor is in operation is supported on the locking plate (5,6), and while the reactor is shut down is supported on the sleeve tube (3) by means of a pawl device (14), the length of travel of the auxiliary tube (12) being such that when the pawl device is in operation the support tube (8) is at least partly relieved of the weight of the moderator column.

3,841,966

METHOD OF PREPARING AN OPTICALLY ACTIVE AMINO ACID FROM A SALT OF AN ACYL DERIVATIVE THEREOF IN THE RACEMIC FORM

Soichiro Asai, Shoichi Ishii, and Tsutomu Tabira, Kawasaki, and Eigo Tsuchiya and Hideo Tazuke, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 6, 1973, Ser. No. 338,430
Claims priority, application Japan, Aug. 31, 1972, 47/87,419
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 **8 Claims**


Acylase-bearing aqueous solution of N-acyl-DL-amino acid salt
(Selective hydrolysis of) (N-acyl-L-amino acid)
L-amino acid crystals
Mother liquor
N-acyl-DL-amino acid salt crystals
(Selective dissolution of) (N-acyl-L-amino acid salt)
Cryst. N-acyl-D-amino acid salt
Mother liquor

1. A method of preparing one optically active enantiomorph of an amino acid from a salt of an N-acyl derivative of the racemic form of said acid which comprises:

(a) contacting said salt in an aqueous medium with an effective amount of acylase until said one enantiomorph is formed by said acylase simultaneously with the forming of a corresponding amount of the salt of said acyl derivative of the other enantiomorph of said amino acid;

(b) contacting said aqueous medium containing said acylase and the salt of said acyl derivative of the other enantiomorph with crystals of the salt of said acyl derivative of said racemic form until an amount of salt of said acyl derivative of said one enantiomorph is dissolved from said crystals into said medium, and the residual crystals are enriched with the salt of said acyl derivative of said other enantiomorph; and

(c) recovering said one enantiomorph from said medium in substantially pure form,

(1) the solubility in water of said salt of said acyl derivative of the racemic form of said amino acid being greater than the solubilities of said salts of the acyl derivatives of the optically active enantiomorphs of said amino acid,

(2) said acylase being capable of selectively deacylating said salt of said acyl derivative of said other enantiomorph,

(3) the base moiety of said salt being free of deleterious influence on the deacylating effect of said acylase.

3,841,967

PROCESS FOR THE PRODUCTION OF ZEAXANTHIN

Jaroslav Dasek, Yverdon, David Shepherd, Morges, and Knut Rude Traelnes, Renens, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,528
Claims priority, application Sweden, Oct. 27, 1971, 15,626/71; May 24, 1972, 7,664/72
Int. Cl. C12d *1/00*
U.S. Cl. 195—29 **18 Claims**

1. A process for preparing zeaxanthin by culture of a zeaxanthin-producing microorganism of the *Flavobacter* genus in which:

(a) the microorganism is first cultured in a nutrient medium therefor until cells in a state of growth and zeaxanthin production are obtained and

(b) the cells are then cultured, at a temperature of 22 to 25° C. and with sufficient oxygenation, in an aqueous nutrient medium therefor containing at least one carbohydrate, at a level of 15 to 35 mg./ml., as assimilable carbon source and at least one source of assimilable amino nitrogen containing free amino acids, during the culture the respective amounts of carbon and nitrogen source present in the medium are maintained in a substantially constant ratio by adding these substances, and culture is continued until a substantial amount of zeaxanthin is accumulated in the medium.

3,841,968

FERMENTATIVE PREPARATION OF L-ISOLEUCINE

Ichiro Chibata, Suita, Masahiko Kisumi, Kobe, Saburo Komatsubara, Kyoto, and Masaki Sugiura, Osaka, Japan, assignors to Tanabe Seiyaku Co., Ltd.

No Drawing. Continuation-in-part of abandoned application Ser. No. 201,400, Nov. 23, 1971. This application Aug. 21, 1972, Ser. No. 282,284
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **10 Claims**

1. A process for preparing L-isoleucine which comprises cultivating an isoleucine hydroxamate-resistant mutant or an isoleucine hydroxamate- and α-aminobutyric acid-resistant mutant of *Serratia marcescens* in a nutrient medium under aerobic conditions to produce a

fermentation broth, and recovering accumulated L-isoleucine from the fermentation broth.

3,841,969

PREPARATION OF IMMOBILIZED ENZYMES

Anthony Nicholas Emery, Sidney Alan Barker, and Julio Maggioly Novais, Birmingham, England, assignors to Ranks Hovis McDougall Limited, London, England

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,302
Claims priority, application Great Britain, Feb. 10, 1971, 4,373/71
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **26 Claims**

1. A process for the preparation of a water-insoluble, active enzyme which process comprises reacting a polysaccharide, nylon, glass or a polysaccharide derivative selected from the group consisting of microcrystalline cellulose, diethylaminoethyl cellulose, carboxymethy cellulose, sawdust, wood chips, paper, cotton, cross-linked dextran and cross-linked starch with an aqueous solution of a metal salt selected from the group consisting of the halides and sulfates of titanium, tin, zirconium or iron to form a mixture, thereafter drying the resulting mixture at a temperature of about 20° C–60° C., washing the resulting metallic derivative free from unreacted salts, and reacting the metallic derivative with said enzyme at pH 3 to 7 at a temperature not below about 0° C. and not so high as to inactivate the enzyme.

3,841,970

IMMOBILIZED ENZYMES

Joseph S. Matthews, Ohara Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 19, 1972, Ser. No. 316,452
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **5 Claims**

1. A method for the preparation of an immobilized enzyme which comprises reacting an aqueous solution of an enzyme with an epoxy containing polymer prepared by the reaction of a solid polymeric diglycidyl ether of bisphenol A having an average of at least about one repeating unit with a stoichiometric excess of a nitrile reactant selected from acrylonitrile and methacrylonitrile.

3,841,971

SYNERGISTIC ENZYMES ADSORBED WITHIN POROUS INORGANIC CARRIERS

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Feb. 16, 1973, Ser. No. 332,804
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **4 Claims**

1. An immobilized enzyme composite comprising two synergistic enzymes adsorbed to the internal surface of a high surface area, porous titania body, the porous titania body having an average pore diameter at least as large as the largest dimension of the larger enzyme but less than 1000 A., and the two synergistic enzymes selected from the group consisting of glucose oxidase and catalase, galactose oxidase and catalase, D-amino acid oxidase and catalase, chymotrypsin and trypsin, and papain and *Streptococcus* peptidase A.

3,841,972

CONTROL OF FOAM DURING GROWTH OF A MICROORGANISM

Nai Yuen Chen, Titusville, N.J., Richard I. Leavitt, Morrisville, Pa., and Vernon F. Coty, Trenton, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,689
Int. Cl. C12b *1/18*
U.S. Cl. 195—107 **22 Claims**

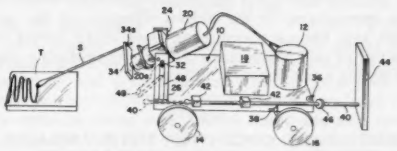
1. In a process for the growth of cells of an aerobic microorganism in an agitated culture medium contained in a fermenter and in contact with an oxygen-containing gas, said culture medium containing an inoculum of said microorganism, an aqueous mineral salt nutrient, and a liquid hydrocarbon substrate, the improvement for controlling the formation of foam in said culture medium during growth of said cells of said microorganism comprising circulating said culture medium over a solid, unit body having a minimum dimension of 0.001 inch of a polymer having a molecular weight above 25,000 selected from the group consisting of polyethylene, polypropylene, polybutylene, and polystyrene, said solid, unit body being in the form of a filament, a distinct shape, or an indiscriminate shape.

3,841,973

APPARATUS FOR MICROBIOLOGICAL SAMPLING

Judd R. Wilkins and Stacey M. Mills, Hampton, Va., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 24, 1973, Ser. No. 326,198
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 **10 Claims**



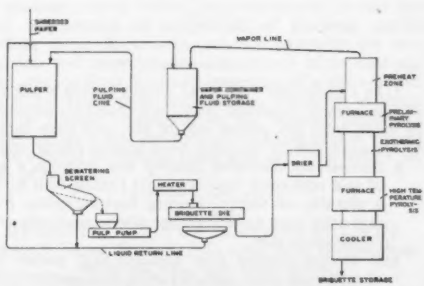
1. An automatic mechanical swabbing apparatus for microbiologically sampling surfaces using cotton swabs comprising an independently movable transport device, drive means mounted on said device for propelling said device and swabbing means mounted on said device for imparting a predetermined controlled swabbing motion to a swab supported thereby during the movement of said transport device, said transport device comprising a wheeled cart and said drive means comprising a drive motor for propelling said cart.

3,841,974

PROCESS FOR THE MANUFACTURE OF CHARCOAL

Philip S. Osborne, Oklahoma City, Okla., assignor to The Oklahoma Publishing Company, Oklahoma City, Okla.

Filed Sept. 12, 1972, Ser. No. 288,462
Int. Cl. C10b *53/08*
U.S. Cl. 201—2.5 **6 Claims**



1. A continuous process for the manufacture of charcoal from fibrous material selected from the group con-

sisting of paper, paper board, wood particles, and cloth, comprising the steps of; pulping said fibrous material with a water base pulping solution comprised of gluten containing binders and lignosulfonate dispersing agents to reduce the fibrous material to a homogeneous fibrous mass in a saturated pulp having a liquid content of approximately 90%–99% by weight, compressing said saturated pulp to form a compacted pulp having a fiber content of at least approximately 50% by weight and which is substantially uniform in density, pyrolyzing said compacted pulp in a pyrolysis zone where preliminary pyrolysis occurs at temperatures between approximately 500° F. to 600° F. and exothermic pyrolysis occurs at temperatures between approximately 500° F. to 700° F. and high temperature pyrolysis occurs at temperatures above approximately 800° F., thereby forming a non-fibrous charcoal and a liquid condensate byproduct containing tars, oils, and water soluble fractions, cooling said charcoal to at least approximately 350° F., storing the cooled charcoal in an oxygen free atmosphere until temperature below combustion is reached, returning said liquid condensate byproduct to said water base pulping solution so that said homogeneous fibrous mass is impregnated with said byproduct, whereby said liquid condensate byproduct which has been impregnated in the fibrous structure of the pulp causes said fibrous structure to break down during the pyrolysis of said compacted pulp thereby producing charcoal having a non-fibrous structure.

3,841,975

HORIZONTAL COKE OVEN WITH VARIABLE BURNERS ALONG THE FLUE LENGTH

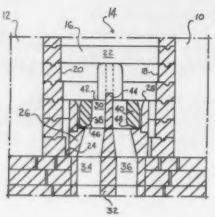
Wilhelm Jakobi and Arnulf Schuffler, Essen, and Heinrich Schurhoff, Essen-Heisingen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 26, 1972, Ser. No. 300,879

Claims priority, application Germany, Nov. 4, 1971, P 21 54 702.4

Int. Cl. C10b *1/06, 5/02*

U.S. Cl. 202—139 **6 Claims**



1. In a horizontal coke oven battery having a plurality of transversely extending coke oven chambers increasing in width from the pusher side of the coke oven battery to the coke side of the coke oven battery comprising,

a transversely extending heating wall between a pair of said coke oven chambers, said heating wall having a plurality of vertical heating flues extending from said coke oven battery pusher side to said coke oven battery coke side,

said vertical heating flues adjacent said pusher side of said coke oven battery having base portions with parallel flow burners therein, said parallel flow burners having separate passageways extending therethrough for separately introducing combustion gas and air into the flues so that said combustion gas and air are admixed in the flues to provide a relatively elongated flame, and

said vertical heating flues adjacent said coke side of said coke oven having base portions with mixing jet burners therein, said mixing jet burners having separate passageways for separately introducing combustion gas and air into said burner, said mixing jet burners having a chamber therein, said passageways opening into said chamber so that combustion gas and air are premixed in said chamber within the burner and ignited adjacent the base portion of the flue to provide a relatively shorter flame than the flame produced in said flues having parallel flow burners.

3,841,976

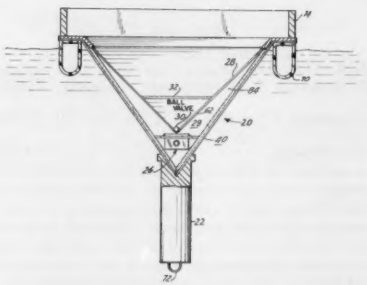
DISTILLING SEA WATER DIFFUSED THROUGH A MEMBRANE

Harold W. Scott, Ridgefield, Conn., and Russell A. Eversole, Purdy Station, N.Y., assignors to Basic Sciences, Inc., Bethel, Conn.

Filed Nov. 16, 1971, Ser. No. 199,245

Int. Cl. C02b *1/06*

U.S. Cl. 202—236 **10 Claims**

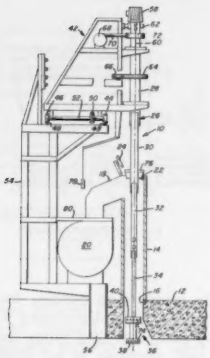


1. A still apparatus adapted to be placed in contact with a source of liquid solvent having a concentration of dissolved solids therein and from which the solvent is to be obtained, said apparatus comprising a frame, means in said frame defining an enclosed chamber and including a first osmotic membrane forming a peripheral portion of said chamber and located in said frame to be in contact with the liquid in said source and a second membrane at least partially formed of an osmotic material defining another peripheral portion of said chamber; and a liquid solution in said chamber having a higher concentration of solids than said source whereby an osmotic pressure is produced causing liquid solvent to pass by osmosis from said source to said chamber creating a pressure therein while the dissolved solids in said source remain in the source; an evaporator lens mounted in said frame opposite said second membrane in position to be exposed to electromagnetic radiation when said first osmotic membrane is in contact with said source and cooperating with said second membrane to form an evaporation chamber wherein said lens evaporates liquid solvent on the side of said second membrane opposite said chamber, whereby said pressure in said chamber forces liquid solvent through the portion of said second membrane formed of an osmotic material by reverse osmosis as said solvent is evaporated and condenses on said lens, and means for collecting the condensed solvent from said lens.

3,841,977
APPARATUS FOR CLEANING THE ASCENSION PIPES OF COKE OVENS

Walter Stanke, Werner Wortberg, and Karl Otto Fuckert, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 5, 1973, Ser. No. 367,238
Claims priority, application Germany, June 21, 1972, P 22 30 278.9
Int. Cl. C10b *43/06*
U.S. Cl. 202—241 6 Claims



1. Apparatus for cleaning the ascension pipes of a coke oven battery comprising,

support means mounted on the coke oven battery above the ascension pipes associated with the coke oven, said support means being movable longitudinally along said coke oven battery,

a tubular telescopic rod member rotatably mounted on said support means, said telescopic rod member having a plurality of sections of decreasing outer dimensions so that said sections telescope within each other,

means non-rotataby connecting said plurality of sections, a cleaning tool connected to the bottom section of said telescopic rod member,

a cable member extending downwardly through a passageway in said tubular telescopic rod member and connected at one end to the lower end of the bottom section, said cable member other end connected to a winch member positioned above said tubular telescopic rod member,

means to unwind said cable from said winch and extend said plurality of sections of said telescopic rod member within said ascension pipe, and

means to rotate said tubular telescopic rod member so that said cleaning tool removes carbonaceous or graphitic deposits from the inner surface of said ascension pipe.

3,841,978
METHOD OF TREATING A TITANIUM ANODE

San-Cheng Lai, Edmond, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Dec. 11, 1972, Ser. No. 313,851
Int. Cl. C01b *13/14*
U.S. Cl. 204—29 3 Claims

1. A method for the electrodeposition of manganese dioxide which comprises:

pretreating a titanium anode by providing an aqueous electrolyte containing at least 25 gm./l. fluoride ions and from about 800 to 1200 gm./l. of at least one other compound selected from the group consisting of acetic acid, ethylene glycol and a mixture of nitric acid and phosphoric acid;

placing said titanium anode in contact with said electrolyte;

placing a cathode in contact with said electrolyte;

electrolyzing said electrolyte at an anodic current density of at least 10 amps/ft.^{2}; placing the treated titanium anode in an electrolytic cell for the electrodeposition of manganese, said cell containing an electrolyte comprising an aqueous solution of manganous ion in a concentration of from about 15 to 50 gm./l. and from about 10 to 25 gm./l. sulfuric acid, effecting the electrodeposition of manganese dioxide on the anode at an anodic current density of from about 8 to 25 amp/ft.^{2} and recovering said electrodeposited manganese dioxide.

3,841,979
METHOD OF PREPARING SURFACES FOR ELECTROPLATING

Donald A. Arcilesi, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Original application Aug. 20, 1971, Ser. No. 173,645, now Patent No. 3,751,289. Divided and this application Mar. 22, 1973, Ser. No. 343,730
Int. Cl. C23f *17/00*
U.S. Cl. 204—38 B 1 Claim

1. A process for electrodepositing bright copper from aqueous acidic baths comprising buffing a metal surface; immersing said pretreated metal surface in organic solvent; then electrolytically cleaning said surface in an alkaline solution, rising said surface, immersing said surface in acid, rinsing said surface thereby obtaining a bright, clean metal surface; depositing on said surface a coating of copper from a solution containing: 0.01 grams per liter to 10 grams per liter of $CuSO_4 \cdot 5H_2O$; 0.1 grams per liter to 500 grams per liter of nonoxidizing acid; and 0.1 grams per liter to 100 grams per liter of a polyether containing at least 5 ether oxygen atoms per molecule; and electrodepositing on said strike coating a relatively thicker layer of bright, strongly leveled, ductile copper from a copper plating bath.

3,841,980
ELECTROLYTIC DEPOSITION OF PLATINUM, IRIDIUM AND THEIR ALLOYS

Jean Grosbois, Montreuil-sous-Bois, Jean-Claude Zimmer, Chatillon-sous-Bagneux, and Maurice Leroy, St.-Germain-en-Laye, France, assignors to Rhone-Progil, Paris, France

No Drawing. Filed Nov. 30, 1972, Ser. No. 310,884
Claims priority, application France, Dec. 2, 1971, 7143265
Int. Cl. C23b *5/24, 5/32*
U.S. Cl. 204—43 N 14 Claims

1. Baths, which are aqueous and acidic and substantially bromide-ion free, for the deposition by electrolysis of platinum and/or iridium, characterized by the fact that they are formed of compounds of platinum and/or iridium giving in aqueous solution primarily the bromoiridic and bromoplatinic anions, and of at least one acid selected from the group consisting of nitric, sulfuric, perchloric and bromic acids, and in which the platinum and/or iridium concentrations are between about 0.1 gram and 60 grams per liter and the said acid is present in an amount of between about 0.05 and 1 equivalent per liter of bath.

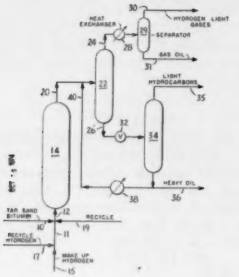
3,841,981
HYDROGENATION OF TAR SAND BITUMEN

Edwin T. Layng, Summit, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,799
Int. Cl. C10g *1/00, 9/16, 23/00*
U.S. Cl. 208—48 Q 10 Claims

1. In a process for refining a tar sand derived material selected from the group consisting of a natural tar and

bitumen, which refining process includes the steps of passing the feed substantially in the liquid phase through a reaction zone in the presence of particulate contact material and a hydrogen containing gas under temperature in the range of 700 to 850° F. and hydrogen partial pressure in the range of 400 to 2000 p.s.i. wherein the contact material is maintained in an ebullated state by



the passage of fluids through the reaction zone and an effluent is removed from the reaction zone and passed to a separation zone and wherein the effluent is separated into at least a light oil fraction and a heavy oil fraction, the improvement which comprises quenching the effluent with a compatible oil fraction to a temperature below coking at a point prior to the separation of the effluent into its fractional components.

3,841,982

METHOD TO IMPROVE THE BRIGHTNESS OF ZINC FROM AN ALKALINE ZINCATE ELECTRODEPOSITION BATH

Gim Yee, Southfield, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Continuation-in-part of application Ser. No. 244,938, Apr. 17, 1972. This application Feb. 20, 1973, Ser. No. 333,927

Int. Cl. C23b *5/10, 5/46*

U.S. Cl. 204—55 R **36 Claims**

1. An aqueous alkaline electroplating bath comprising inc oxide, alkali metal hydroxide, polyethyleneimine having a molecular weight of from 1,000 to 400,000 and being present in a concentration of 0.2 to 100 grams per liter and a zinc brightening amount of a nitrogen heterocyclic compound of the formula:

wherein X is

$$-S- \text{ or } -\overset{|}{N}R_3; \text{ and}$$

A is independently selected from the group consisting of

$$-\overset{|}{C}N(R_3)_3; \; -\overset{|}{C}=S; \; -C-S(R_3); \; -\overset{|}{C}=NR_3 \text{ and } -\overset{|}{C}H;$$

n is 0 or 1; when n is 0, nitrogen is doubly bonded to carbon in A; with the proviso that when n is O, A is

$$-\overset{|}{C}N(R_3)_3; \; -\overset{|}{C}-S(R)_3 \text{ or } -\overset{|}{C}H;$$

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, phenyl; and may be joined to form a six membered aromatic carbocyclic ring which may be substituted and R_3 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl.

3,841,983

SURFACE PREPARATION PROCESS FOR RECOATING OF USED COATED METALLIC ELECTRODES

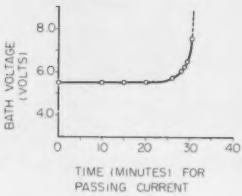
Reiichi Itai and Hideo Kanai, Maebashi, Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,115

Claims priority, application Japan, Aug. 28, 1972, 47/85,281

Int. Cl. B01k *1/00*

U.S. Cl. 204—146 **12 Claims**



1. A surface preparation process for recoating of a used coated metallic electrode coated with one or more platinum group metals or iron group metal oxides, comprising using said electrode as an anode and passing a current at about 1 to 100 A./dm.^{2} of anode current density between said anode and steel cathodes, in an electrolytic bath containing an aqueous solution containing about 5 to 70 percent by weight of a salt selected from the group consisting of a sulfate, a nitrate, a perchlorate, a chlorate, a persulfate and a mixture thereof, at a temperature of about 0 to 50° C., for a period of time sufficient to effect removal of coating remaining on said used electrode.

3,841,984

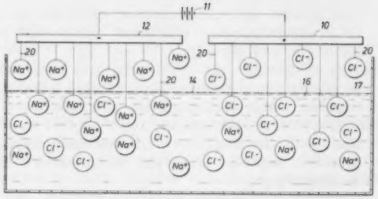
ELECTRO-EXTRACTION PROCESS

Thomas G. Barnes, El Paso, Tex., assignor to Globe Universal Sciences, Inc., Houston, Tex.

Filed Jan. 17, 1973, Ser. No. 324,447

Int. Cl. C02c *5/12*

U.S. Cl. 204—149 **29 Claims**



1. A process for removing ions from an ionized aqueous solution comprising the steps of:

externally applying an electric field to extract ions out of the surface of the solution and to transport the ions away from the solution;

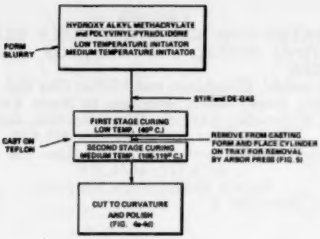
electrically neutralizing the extracted ions into uncharged elementary chemicals separately related to the ions; and

collecting separate resulting chemical products outside of the solution.

3,841,985
IRRADIATED COMPOSITION FOR SOFT CONTACT LENS

Kenneth F. O'Driscoll, Williamsville, and Allan A. Isen, Buffalo, N.Y.; said Isen assignor to Warner-Lambert Company, Morris Plains, N.J.

Original application Nov. 30, 1969, Ser. No. 880,828, now Patent No. 3,700,761. Divided and this application Aug. 25, 1972, Ser. No. 283,778
Int. Cl. B01j 1/10
U.S. Cl. 204—159.16 1 Claim


HYDROXY ALKYL METHACRYLATE and POLYVINYL PYRROLIDONE
LOW TEMPERATURE INITIATOR
MEDIUM TEMPERATURE INITIATOR
FORM SLURRY
STIR and DE-GAS
FIRST STAGE CURING LOW TEMP. (40° C.)
SECOND STAGE CURING MEDIUM TEMP. (100-110° C.)
CAST ON TEFLON
REMOVE FROM CASTING FORM AND PLACE CYLINDER ON TRAY FOR REMOVAL BY ARBOR PRESS (FIG. 5)
CUT TO CURVATURE AND POLISH (FIG. 4a-4c)

1. A hygroscopic polymerized and irradiated composition adapted to be swollen by water to make a soft contact lens consisting essentially of 20–45% of a high molecular weight solid polyvinyl pyrrolidone onto which is graft polymerized 80–55% of monomethacrylate ester of a glycol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol and dipropylene glycol, there being present less than 1% methacrylic acid and less than 0.2% dimethacrylate as impurities in said ester which is initiated in static condition at 40–60° C. for 4–24 hours with low temperature free-radical initiator selected from the group consisting of disecondary butyl peroxy dicarbonate, pyrrolidone acetyl peroxide and cyclohexanone peroxide in a concentration of about 0.1% by weight of said ester and polyvinylpyrrolidone and further polymerized at 90–120° C. for ½ to 2 hours with medium temperature free-radical initiator selected from the group consisting of benzoyl peroxide, diethyl peroxide, azoisobutyronitrile and orthotolyl peroxide in a concentration of about 0.1% by weight of said ester and polyvinyl pyrrolidone, said composition being substantially irradiated under high energy 250 watt ultraviolet radiation of wavelength 2000–4000 angstroms for ½ to 4 hours of X-rays at a dosage of 10^7 roentgens for 15 minutes to 1 hour or under gamma rays in a dosage of 5 to 95 megarads for 5 minutes to 1 hour.

3,841,986
ELECTROPHORETIC DEPOSITION OF CERAMIC COATINGS

Richard G. Rion, Parma Heights, and Louis J. Gazo, Jr., Independence, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

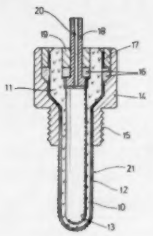
No Drawing. Filed Nov. 16, 1972, Ser. No. 307,140
Int. Cl. B01k 5/00
U.S. Cl. 204—181 9 Claims

1. A process for electrophoretically depositing a ceramic coating on an iron-containing workpiece, comprising contacting said workpiece with an aqueous solution of a water-soluble salt of a metal below iron in the electromotive series to deposit chemically a layer of said metal on the iron-containing workpiece, electrophoretically depositing a ceramic coating on said metal layer from a dispersion of ceramic particles, and maintaining an alkaline pH in said dispersion of at least 11 to provide greater throwing power without discoloring the resulting ceramic coating.

3,841,987
ELECTRO-CHEMICAL OXYGEN SENSOR, PARTICULARLY FOR USE IN THE EXHAUST SYSTEM OF INTERNAL COMBUSTION ENGINES

Karl-Hermann Friese and Heinz Geier, Leonberg, Rudolf Pollner, Kornwestheim, and Heino Schallert, Stuttgart, Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Dec. 18, 1972, Ser. No. 316,008
Claims priority, application Germany, Mar. 10, 1972, P 22 11 585.1
Int. Cl. F02b 1/100; G01n 27/46
U.S. Cl. 204—195 S 13 Claims



1. Electro-chemical oxygen sensor, particularly for oxygen content determination in the hot exhaust gases of internal combustion engines, which is an oxygen concentration cell comprising

a tube of ion conductive solid electrolyte material (**10**) closed at one end and having a thickened collar (**11**) at its other, open end;

an electron conductive layer (**12**) located at the outer surface of the electrolyte material and extending thereover into the region of the collar (**11**);

an inner electrode (**13**) in the hollow interior of the tube of electrolyte material;

a metal socket (**14**) and retaining means (**15**) formed thereon;

an electrically conductive heat resistant sealing mass which maintains its electrical conductivity and sealing characteristics at operating temperatures of between about 350° C. and 450° C. (**16**) connecting the collar (**11**) of the electrolyte tube (**10**) to the socket, said sealing mass filling the space between the tube and the socket to form a gas-tight seal and an electrical contact between the conductive layer (**12**) and the socket (**14**).

3,841,988
CONTROL FOR IMPRESSED CURRENT CATHODIC PROTECTION SYSTEMS

James D. Gleason, Cucamonga, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 12, 1973, Ser. No. 339,747
Int. Cl. C23f 13/00
US. Cl. 204—196 9 Claims

1. A modular cathodic protection system comprising:

(A) a structure to be protected immersed in an electrolyte, and functioning as a cathode;

(B) a plurality of impressed current modules located on the structure, each module consisting of:

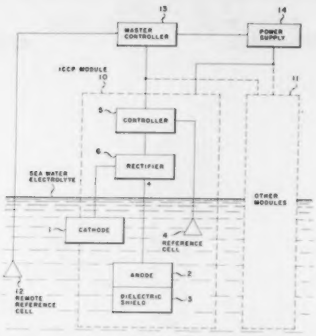
(1) an anode insulatingly mounted on the structure,

(2) a rectifier power supply for providing a direct current between the anode and the structure,

(3) a reference cell and a control circuit for sensing the polarization of the structure and controlling the rectifier;

(C) a master control circuit coupled to each module; and

(D) a reference cell in the electrolyte, remotely located from the modules and connected to the master control circuit;



the master control circuit responsive to the voltage of the last mentioned reference cell to provide an ON signal to each module when the reference cell voltage is below a predetermined level and an OFF signal when the reference cell voltage is above said level.

3,841,989

ELECTROLYTIC CELL INCLUDING A PLURALITY OF ANODES GROUPED AROUND EACH CATHODE FOR INCREASED ELECTROLYTE CIRCULATION IN THE CELL

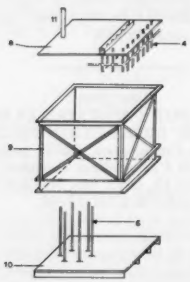
Marcel Delsa, deceased, late of Brussels, Belgium, by Philips Jeannine Guillemine, legal representative, 200 Avenue de Tervueren, Brussels, Belgium

Continuation-in-part of abandoned application Ser. No. 42,702, June 2, 1970. This application Dec. 22, 1972, Ser. No. 317,837

Claims priority, application Luxembourg, June 3, 1969, 58,793

Int. Cl. C23b *5/68*

U.S. Cl. 204—212 **19 Claims**



1. In an apparatus for electrolysis, container means for containing an electrolytic bath, said container means having top and bottom walls, a plurality of anodes carried by and extending upwardly from said bottom wall in the interior of said container means and a plurality of cathodes carried by and extending downwardly from said top wall in the interior of said container means, the number of anodes being greater than the number of cathodes, and said anodes being arranged in groups with each group of anodes being distributed around a single cathode, and said groups of anodes adjoining each other and defining between themselves predetermined spaces in which the bath is adapted to flow in one diretcion which is generally parallel to the anodes and cathodes while in the interiors of said groups the bath is adapted to flow in an opposite direction along said cathodes to provide continuous circulation of the bath with respect to the anodes and cathodes.

3,841,990

APPARATUS FOR SIMULTANEOUSLY ELECTROPLATING INSIDE SURFACES OF ANNULAR BODIES

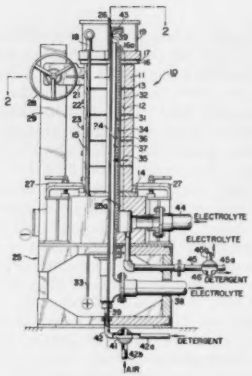
Toshiro Sasaki, Hiroshima, and Michio Oka and Yoshiaki Washio, Kure, Japan, assignors to Toyo Kogyo Co., Ltd., Fuchu-cho, Aki-gun, Hiroshima-ken, Japan

Filed Dec. 26, 1972, Ser. No. 318,647

Claims priority, application Japan, Dec. 25, 1971, 46/4,322, 46/4,323

Int. Cl. B01k *3/00;* **C23b** *5/68*

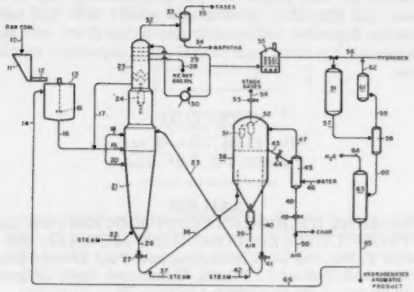
U.S. Cl. 204—224 R **7 Claims**



1. An apparatus for simultaneously electroplating the inside surfaces of a plurality of annular bodies arranged one above the other and with the inside surfaces in registry with each other, comprising: a plurality of seats one each interposed between any adjacent pair of said annular bodies for electrically insulating the same from each other and for keeping hermetically sealed adjacent annular bodies; an upright anode having an outer surface for forming between the outer surface and the inside surfaces of said tubular bodies a first electrolyte passage in which an electrolyte is forced to flow; a cathode conductor having individual means for electrical connection with each of said annular bodies for applying to the same a negative potential; a hat hermetically mounted on the uppermost of said seats for defining with the bodies and anode a sealed chamber; a second electrolyte passage longitudinally formed in said anode for passing therethrough an electrolyte and having a fluid communication with the first-named electrolyte passage by way of said chamber; and a detergent-air passage longitudinally formed in said anode for selectively passing therethrough a detergent and fresh air and having an outlet port extending into said chamber for cleaning said chamber and said first and second electrolyte passages, both for diluting therewith gases remaining in said chamber and for scavenging the

first and second electrolyte passages, after the electroplating operation has been completed.

3,841,991
COAL CONVERSION PROCESS
Saul J. Cohen, Chester, N.J., and Jack M. Hochman, Cobham, England, assignors to Esso Research and Engineering Company
Filed Apr. 5, 1973, Ser. No. 348,397
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **10 Claims**



1. A process for the preparation of liquid products from coal which comprises:

(a) preparing a slurry of finely divided coal particles in a hydrogenated aromatic hydrogen-donor solvent having a boiling point in the range between about 350° F. and about 800° F. in a slurry preparation zone;

(b) introducing said slurry from said slurry preparation zone into a fluidized bed coking unit reaction zone;

(c) withdrawing overhead products from said fluidized bed coking unit reaction zone and recovering an intermediate fraction boiling in the range between about 350° F. and about 800° F.;

(d) hydrogenating said intermediate fraction and introducing at least part of the hydrogenated product into said slurry preparation zone;

(e) transferring solids from said fluidized bed coking unit to a burner and burning a portion of the solids to provide heat for the process; and

(f) recycling hot solids from said burner to said fluidized bed coking unit reaction zone.

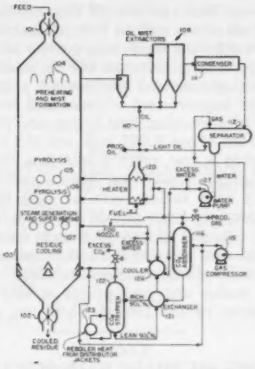
3,841,992
METHOD FOR RETORTING HYDROCARBONACEOUS SOLIDS
John B. Jones, Jr., and Adam A. Reeves, Denver, Colo., assignors to Paraho Corporation, Denver, Colo.
Filed Dec. 1, 1972, Ser. No. 311,248
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **15 Claims**

1. In a continuous method of the destructive distillation of material containing carbonaceous matter or the like without combustion in a vertical column of particulate matter having a top feed for raw matter and a bottom discharge for processed solids, thereby providing movement of the particulate matter from top to bottom through the column, the improvement of

(1) withdrawing off-gas products and oil mist from a level internally of said column adjacent to but below the top of the column;

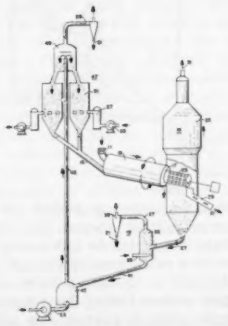
(2) introducing a CO_2 enriched cooling gas internally of said column at a lower level therein adjacent to but above the spent matter discharge and internally of the column to cool the spent matter and to be simultaneously heated thereby; and

(3) introducing externally heated recycled oxygen lean off-gas products at a temperature in excess of the distillation temperature into said column of matter in at least two levels in about the central portion of the column, said at least two levels being spaced apart a sufficient distance to provide the desired residence time for the downwardly moving matter



to produce a predetermined retorting temperature level of about 1000–1200° F., said recycled gas having insufficient oxygen for combustion of the carbonaceous matter in the column, said heated gas joining with the rising now heated cooling gas to form the heating media for the distillation of the matter in the central portion of the column.

3,841,993
RETORTING OF OIL SHALE WITH SPECIAL HEAT CARRIERS
Donald K. Wunderlich and James L. Skinner, Richardson, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 287,669, Sept. 11, 1972, which is a continuation-in-part of application Ser. No. 284,288, Aug. 29, 1972, both now abandoned. This application Oct. 26, 1973, Ser. No. 409,957
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **25 Claims**



1. In a method for retorting crushed oil shale containing carbonaceous organic matter and mineral matter wherein oil shale is retorted by contacting said oil shale

with particulate hot heat carriers in a retort zone to gas and oil products, particulate spent shale, and an organic combustible deposition on at least a portion of said heat carriers, said heat carriers having been heated in a deposition burning zone to a retort zone inlet temperature of between 1000° F. and 1400° F. mainly by combustion of a combustible carbon-containing deposition on said heat carriers, said heat carriers being in an amount sufficient to provide at least 50 percent of the heat required to vaporize a major portion of the carbonaceous matter from said oil shale and to heat said crushed oil shale from its retort zone inlet temperature to a retort zone outlet temperature of between 800° F. and 1150° F., and wherein said gas and oil producs are separated and recovered, the improvement wherein said heat carriers are comprised of particulate heat bodies and pellets in a size range between about 0.055 inch and 0.5 inch, said heat bodies having a low surface area less than 0.1 square meter per gram of said heat bodies, said pellets having a relatively high surface area at least as great as 20 square meters per gram of said pellets, said heat carriers containing between 10 and 90 percent by weight of said heat bodies and between 90 and 10 percent by weight of said peilets, and the combined average surface area of said heat bodies and said pellets in said heat carriers being between 10 and 150 square meters per gram.

3,841,994

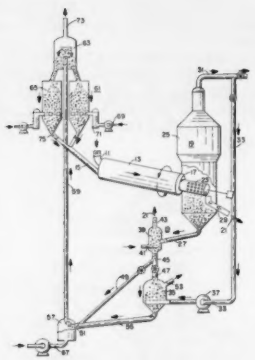
RETORTING OIL SHALE WITH SPECIAL PELLETS AND SUPPLEMENTAL DEPOSITION

Donald K. Wunderlich and James L. Skinner, Richardson, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 304,074, Nov. 6, 1972, which is a continuation-in-part of application Ser. No. 284,288, Aug. 28, 1972, both now abandoned. This application Oct. 26, 1973, Ser. No. 410,098

Int. Cl. C10b *53/06*

U.S. Cl. 208—11 **43 Claims**



1. In a method for retorting crushed oil shale containing carbnoaceous organic matter and mineral matter wherein oil shale is retorted by contacting said oil shale with hot pellets in a retort zone to gas and oil products, a combustible deposition on said pellets, and particulate spent shale, said pellets having been heated in a pellet deposition burning zone to a retort zone inlet temperature of between 1000° F. and 1400° F. mainly by combustion of a combustible carbon-containing deposition on said pellets, said pellets being in an amount sufficient to provide at least 50 percent of the heat required to vaporize a major portion of the carbonaceous matter from said oil shale and to heat said crushed oil shale from its retort zone inlet temperature to a retort zone outlet temperature of between 800° F. and 1150° F., and wherein said gas and oil products are separated and recovered, the improvement comprising passing at least a portion of said pellets from said separation zone to a supplemental deposition zone and at the same time passing at least a portion of said oil products to said supplemental deposition zone into contact with said pellets in said supplemental deposition zone to deposit additional combustible carbon-containing deposition on said pellets in said supplemental deposition zone, and thereafter passing said pellets with said additionally deposited combustible deposition from said supplemental deposition zone to said pellet deposition burning zone.

ERRATUM

For Class 208—48 see:
Patent No. 3,842,122

3,841,995

TWO-ZONE HYDROGENATION PROCESS FOR THE PRODUCTION OF COLORLESS MINERAL OIL

Ralph J. Bertolacini, Chesterton, and Paul Donald Hopkins and Roland L. Menzl, Hammond, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 183,615, Sept. 24, 1971. This application June 12, 1973, Ser. No. 369,209

Int. Cl. C10g *23/04*

U.S. Cl. 208—89 **10 Claims**

1. A process for the production of a colorless mineral oil, which process comprises contacting a dewaxed mineral lubricating oil distillate or a dewaxed and solvent-extracted mineral lubricating oil distillate of reduced aromatic hydrocarbon content in a first reaction zone with a sulfactive hydrogenation catalyst in the presence of hydrogen and under hydrogenation an desulfurization conditions to produce a hydrogenated and desulfurized product; contacting said hydrogenated and desulfurized product in a second reaction zone with a second catalyst comprising a Group VIII noble metal deposited upon a large-pore-diameter alumina having a surface area of about 150 square meters per gram to about 500 square meters per gram and an average pore diameter of about 100 A. to about 200 A. in the presence of hydrogen and at a temperature of at least 450° F., a LHSV of about 0.25 to about 1 volume of hydrocarbon per hour per volume of catalyst, a hydrogen addition rate of about 1,500 SCFB to about 7,000 SCFB, and a hydrogen partial pressure of at least 500 p.s.i.g., said temperature in said second reaction zone having a maximum value of 500° F.; and recovering said colorless mineral oil from the effluent from said second reaction zone.

3,841,996

HYDRODESULPHURIZATION PROCESS

Andreas Christian Jacobsen, Charlottenlund, Denmark, assignor to Haldor Frederik Axel Topsol, Frydenlundsvej, Vedbaek, Denmark

Filed Sept. 15, 1972, Ser. No. 289,503

Claims priority, application Great Britain, Sept. 28, 1971, 45,200/71

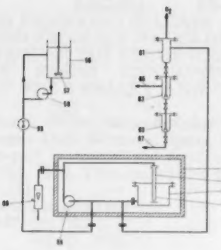
Int. Cl. C10g *13/02, 37/02*

U.S. Cl. 208—112 **10 Claims**

1. In a process for the catalytic hydroconversion at elevated temperature and pressure of crude oils and heavy petroleum fractions, the improvement comprising the steps of

(a) in a reaction loop, maintained at hydroconversion conditions of elevated temperature and pressure and provided with inlets, outlets, mixing devices, and a circulation pump, first forming and thereafter main-

taining a reacting three-phase dispersion consisting of a gaseous hydrogen containing phase, a liquid phase of the oil to be hydroconverted, and a solid phase of the hydroconversion catalyst in particulate form ranging in size from 0.02 to 0.5 mm., measured by the



mesh-width of sieves that retain the particles and let them pass, respectively, said reacting three-phase dispersion occupying all cavities of the reaction loop and being substantially free of concentration gradients in all parts of the reaction loop;

(b) while maintaining the three-phase dispersion and the temperature and pressure conditions for hydroconversion, continuously introducing into the reaction loop feed streams of measured amounts of the hydrogen-containing gas, the liquid oil feed and the particulate hydroconversion catalyst;

(c) simultaneously herewith continuously allowing a corresponding amount of a product stream having substantially the same composition as the reacting three-phase dispersion to flow from the reaction loop; and

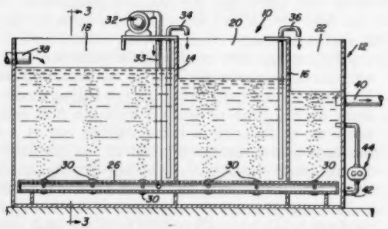
(d) separating the product stream thus flowing from the reaction loop into a hydrogen-containing gas, a product oil and a concentrated slurry or paste of the particulate hydroconversion catalyst in oil.

3,841,997

DUAL AERATION AND FILTRATION SYSTEM WITH RECYCLING

Albert L. McGee, Rio Vista Road, Pocatello, Idaho 82301

Filed Apr. 2, 1973, Ser. No. 346,817
Int. Cl. C02c 1/12
U.S. Cl. 210—15 **5 Claims**



1. A method for treating fluid waste, comprising the steps of:

(a) introducing fluid waste into a first of a plurality of separate chambers, transferring said fluid from the first chamber to a subsequent chamber and establishing in said subsequent chamber a fluid level lower than the fluid level in the first chamber;

(b) aerating fluid waste in the chambers by intermittingly passing an aerating fluid through interconnected diffusers arranged in the lower portion of chambers, the diffusers in the chambers being interconnected by a conduit extending between the chambers at a lower portion thereof;

(c) filtering the waste alternately with the aerating step (b) by passing fluid in the chambers through the diffusers and into a subsequent one of the chambers whenever passage of the aerating fluid into the chambers is interrupted, the passing of the fluid between the chambers being caused by the difference in the level of the fluid in the chambers; and

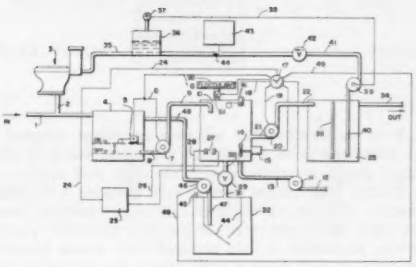
(d) discharging treated fluid from the last one of said plurality of chambers.

3,841,998

AEROBIC WASTEWATER TREATMENT PROCESS WITH PARTIAL REUSE AND INFREQUENT DOSING TO SOIL

Robert Paul Farrell, Jr., Schenectady, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Original application Mar. 11, 1970, Ser. No. 18,682, now abandoned. Divided and this application Dec. 7, 1972, Ser. No. 312,984
Int. Cl. C02c 1/00
U.S. Cl. 210—16 **11 Claims**



1. A method for treating waste material received from a dwelling unit having a recycled water supply in a plurality of treatment and storage tanks comprising the following steps in order: collecting fluid waste to be treated over an interval of time in a holding tank; transferring the fluid waste to a treatment tank; aerobically treating the quantity of waste material collected in the treatment tank and aerating said quantity of waste material for a period of time to enhance the aerobic treatment; admitting a flocculating substance into the treatment tank and mixing the flocculating substance into the aerobically treated waste material; providing a sufficient quiescent period of time following admission and mixing of the flocculating substance for settling and separating of said waste material with an effluent to the top and sludge to the bottom of the treatment tank; drawing off a substantial quantity of effluent from the upper portion of the treatment tank and passing said effluent to an effluent storage tank where a portion of said effluent is supplied to said recycled water supply and another portion is supplied to a drainage system in infrequent doses; removing a portion of the sludge in excess of a predetermined quantity from the lower portion of the treatment tank and passing the removed sludge to a digester; treating the sludge in the digester and providing a settling quiescent period for the removed sludge and any carried liquid to separate the carried liquid from sludge; and thereafter returning the separated carried liquid back to

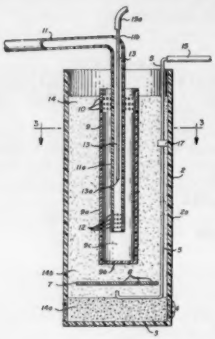
said holding tank for repeated aerobic treatment in said treatment tank.

3,841,999

PROCESS AND APPARATUS FOR PURIFYING AND AERATING AQUACULTURE POOLS

John P. Bennett, Portola Valley, and George D. Bliss, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 18, 1972, Ser. No. 315,995
Int. Cl. E04h *3/20*
U.S. Cl. 210—17 **15 Claims**



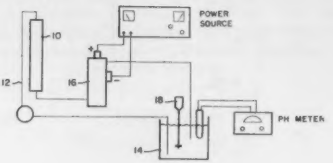
1. A purification and aeration apparatus, adapted to be positioned in an aquaculture pool, comprising an elongated container means having elongate wall means and a bottom wall means closing said elongate wall means thereby defining an elongate container chamber closed on three sides and open at the top, container passage means positioned in said elongate wall means generally adjacent to said bottom wall means for supplying contaminated water to the bottom of said chamber; container air supply means for supplying an air stream to the lower portion of said container chamber at a point above said container passage means; an air distribution means positioned in said container chamber for dispersing and distributing air supplied via said container air supply means; a sump means positioned in said container chamber for receiving purified water; a filter bed of aggregrate located in said container chamber extending from said bottom wall means throughout the heretofore unoccupied space in said container chamber and generally surrounding at least a major portion of said sump means to a level near the top of said elongate container wall, said aggregate being composed of a material having a hard smooth surface having relatively few surface pores and low absorption capacity; sump inlet means for supplying purified water to said sump means; whereby contaminated water is drawn through said container passage means into said filter bed and is air lifted therethrough whereby small particle organic contaminants are entrapped by said filter bed and aerobically biodegraded and excess air and gaseous products of the biodegradation are vented from the water and whereby the water passing through said filter bed is purified and passes into said sump means via said sump inlet means; sump discharge conduit means positioned in said sump means for discharging said purified water from said sump means, sump air supply means for supplying air near the bottom of said sump means whereby said purified water in said sump means is aerated and air lifted through said sump discharge conduit means and discharged therefrom.

3,842,000

PROCESS FOR REMOVAL OF AMMONIA FROM AQUEOUS STREAMS

Gaynor W. Dawson, Richland, Wash., assignor to Battelle Development Corporation, Richland, Wash.

Filed Oct. 7, 1971, Ser. No. 187,468
Int. Cl. B01d *15/04*; C02c *1/44*
U.S. Cl. 210—23 **12 Claims**



1. A process for separating ammonia in the non-ionic state from aqueous streams, comprising:

(1) adjusting the stream to pH 9–12 so that a substantial amount of ammonia in the stream is in the exchangeable, non-ionic form, and

(2) contacting the stream with a water-insoluble ion exchange material having metal cations firmly bound in its matrix to prevent any substantial leaching of the metal cations from the ion-exchange material, the metal cations having a positive ammine complex formation constant and forming ammonia complexes by attachment of non-ionic ammonia to the metal cations, thereby removing the non-ionic ammonia from the aqueous stream.

3,842,001

METHOD FOR EXTRACTING RETAINED OIL AND SOLIDS FROM A FILTER MEDIA AND SEPARATING THE SAME

Howard F. Keller, Jr., Fullerton, Calif., assignor to GBK Enterprises, Inc., Placentia, Calif.

No Drawing. Filed Mar. 21, 1973, Ser. No. 343,285
Int. Cl. B01d *23/24*
U.S. Cl 210—23 **12 Claims**

1. In the filtration method for resolving fluid dispersions containing oil, water and particulate solids, wherein the fluid dispersion is filtered through a finely divided filter media whereby oil and particulate solids are retained by the filter media and the effluent therefrom is clarified water or an oil-water mixture which readily separates into oil and clarified water, the improvement which comprises extracting and removing the oil and particulate solids from the filter media and separating the same by the following sequential steps:

(a) agitating the filter media in the presence of a first aqueous medium containing a nonionic surfactant for the oil to extract the oil from the filter media and form an emulsion of the oil with the first aqueous medium, said agitation being carried out at a temperature below the cloud point of the nonionic surfactant, said nonionic surfactant having an HLB value between about 7 and about 30, and the concentration of said nonionic surfactant in the first aqueous medium being from about 0.01 to about 10.0 percent, by weight, based on the weight of said first aqueous medium, and said nonionic surfactant having a cloud point, under use conditions, below the boiling point of water,

(b) backwashing the filter media with a second aqueous medium to remove the emulsion and particulate solids from the filter media and to obtain a backwashing composition containing the emulsion and particulate solids; and

(c) heating the backwashing composition to a temperature above the cloud point of the nonionic surfactant whereby said backwashing composition is resolved into (a) an upper layer containing solids-free oil, (b) a middle fluid layer containing useable water and (c) a lower fluid layer containing oil-free solids.

3,842,002

METHOD FOR REMOVING SULFATE AND BICARBONATE IONS FROM SEA WATER OR BRACKISH WATER THROUGH THE USE OF WEAK ANIONIC EXCHANGE RESINS CONTAINING AMINO GROUPS OF THE PRIMARY AND SECONDARY TYPE

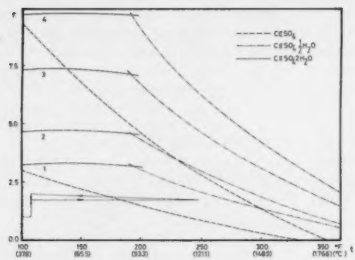
Gianfranco Boari, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Continuation-in-part of abandoned application Ser. No. 54,255, July 13, 1970. This application Mar. 29, 1973, Ser. No. 346,111

Claims priority, application Italy, July 14, 1969, 38,657/69; July 3, 1970, 51,892/70

Int. Cl. B01d *15/04*

U.S. Cl. 210—32 **5 Claims**



1. A method for removing sulfate and bicarbonate ions from sea water or brackish water prior to being subjected to desalination in a conventional desalination plant, which compises:

permitting said sea water or brackish water to pass through a bed containing the chloride form of a weak anionic resin having amino functional groups of the primary and secondary type, said chloride form of said resin being expressed as R—CI, thus permitting the sulfate ions in said sea water or brackish water to be exchanged for the chloride ions of said resin by the following equation:

$$R—Cl+SO_4^{=}\rightarrow R—SO_4+Cl^- \quad (1)$$

said bicarbonate ions in said sea water or brackish water being eliminated by the hydrolysis of said resin according to the following equations:

$$R—Cl+H_2O\rightleftarrows R—OH+\underline{H}^++Cl^- \quad (2)$$

$$HCO_3^-+\underline{H}^+\rightarrow CO_2+\underline{H}_2O \quad (3)$$

and subsequently, regenerating said resin to the chloride form, when said resin is exhausted, by permitting the brine solution discharged from the desalination procedure and having a salt concentration of at least 1.5 times greater than that of said sea water or brackish water to circulate through said bed containing said resin having said amino functional groups of the primary and secondary type,

the chloride/sulfate ratio of said brine solution being at least 3 times greater than that of said sea water or brackish water treated, and

the pH of said brine solution being between 4 and 5 to displace reaction (2) above, to the left.

3,842,003

PROCESS FOR REMOVING PROTEINS AND DECOMPOSITION PRODUCTS THEREOF FROM WASTE WATER

Per Nettli, Asker, Norway, assignor to A/S Apothekernes Laboratorium for Specialpraeparator, Oslo, Norway

No Drawing. Filed Mar. 1, 1973, Ser. No. 337,275

Int. Cl. B01d *21/01*

U.S. Cl. 210—43 **2 Claims**

1. In a process for removing proteins and any decomposition products thereof, especially polypeptides and amino acids, from waste water containing such substances by precipitating the proteins under acidic conditions with an organic sulphuric acid derivative as a precipitant whereby any emulsion of fat and/or oil present in the waste water to be purified is broken down, and whereafter the precipitated product is removed and if desired can be further processed, especially into cattle feed, the improvement comprising precipitating said proteins and decomposition products thereof from said waste water with a precipitating agent comprising at least one esterification product of a sugar with sulphuric acid, said esterification product having a molar weight of at least 200.

3,842,004

FLOTATION MACHINE

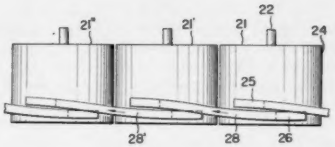
Tatsuya Nagahama, Tokyo, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Jan. 16, 1973, Ser. No. 324,199

Claims priority, application Japan, Jan. 22, 1972, 47/8,432

Int. Cl. B03d *1/00*

U.S. Cl. 210—44 **9 Claims**



1. A froth apparatus comprising side and bottom wall means defining a cell for holding a flotation liquid to be treated, feed means for feeding said liquid into said cell, discharge means for discharging said liquid from the cell after said liquid has been subjected to flotation therein, froth removal means at the upper end of the cell for discharging froth from the cell, an upright impeller shaft extending downwardly into the cell for circulating the flotation liquid around the circumference of the cell, and means for supplying gas into said cell in the vicinity of said impeller shaft for mixing the gas with the flotation liquid to generate in the cell a froth enriched with a selected component of said flotation liquid, which froth rises to the surface of the liquid and is discharged from the cell by said froth removal means, wherein the improvement comprises: said feed means is a feed opening in the side wall of the cell, disposed close to the bottom wall thereof and opening into the cell in a direction substantially tangential to the direction of movement of the flotation liquid in the cell; and

said discharge means is a discharge opening in the side wall of the cell at a location circumferentially spaced from said feed opening and opening into the cell in a direction substantially tangential to the direction of movement of the flotation liquid in the cell, said discharge opening being located on said side wall at a position not higher than the position of said feed opening.

3,842,005

PROCESS OF FLOCCULATING AQUEOUS SUSPENSIONS WITH CATIONIC STARCH ETHERS

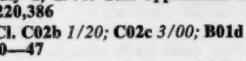
Kenneth B. Moser and Frank Verbanac, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of application Ser. No. 51,605, July 1, 1970. This application Jan. 24, 1972, Ser. No. 220,386

Int. Cl. C02b *1/20;* C02c *3/00;* B01d *21/01*

U.S. Cl. 210—47 9 Claims

1. The process of flocculating material from an aqueous suspension comprising treating said aqueous suspension with a gelatinized, non-crosslinked quaternary ammonium starch ether having a D.S. of at least 0.7 and having a structure selected from the group consisting of:



wherein St is starch, X^- is an anion, and the substituents R_1, R_2 and R_3 are selected from the group consisting of alkyl of up to 12 carbon atoms, such that when the three substituents are the same, none has more than 6 carbon atoms, and when any substituent has more than 6 carbon atoms, the other two substituents are alkyl of up to 2 carbon atoms; and R_3 is a lower alkyl of up to 4 carbon atoms, said starch ether having a charge density of about 2.61×10^{-3}, and having at least 200 anhydroglucose units per starch ether molecule, said starch ether being substantially free of residual crosslinking agents including polyfunctional starch etherifying agents and dihalo organic crosslinker reaction by-products and about 3.35 lbs. said starch ether being capable of flocculating about 1 ton of clay from an aqueous suspension of 320 p.p.m. of a kaolin coating clay predispersed with approximately 0.30% by weight of tetrasodium pyrophosphate, based on the weight of clay, said aqueous suspension having an initial turbidity of about 530 J.T.U., to a final turbidity of less than about 40 J.T.U.

3,842,006

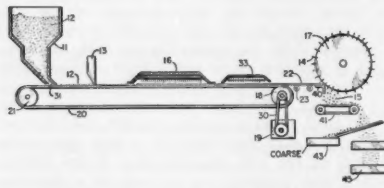
THERMOPLASTIC FILTER MEDIA AND FILTERING PROCESS

William E. Burt, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Original application May 22, 1970, Ser. No. 39,702, now abandoned. Divided and this application Feb. 15, 1972, Ser. No. 226,557

Int. Cl. B01d *37/00*

U.S. Cl. 210—65 6 Claims



1. In a process for removing solids from a liquid passed through a filter media consisting of discrete particles, the improvement comprising passing said liquid through a filter comprising:

(a) a bed having a continually increasing number of particles per unit area in the direction of water flow through the bed;

(b) said particles comprising discrete particles of sintered polyvinyl chloride having a particle size range of from about 6 to about 60 mesh, a bulk density of from about 18 lbs. per cubic foot to about 30 lbs. per cubic foot, and a porosity of from about 25 percent to about 55 percent;

(c) said particles comprising intermixed filter media of at least two different specific gravities; and

(d) there being at least 10 percent by weight of a media of each specific gravity present.

3,842,007

FIBROUS CELLULOSE ACETATE FILTER MATERIAL

Arthur Caputi, Jr., and Thomas C. Wong, Modesto, Calif., assignors to E. & J. Winery, Modesto, Calif.

No Drawing. Filed Feb. 15, 1973, Ser. No. 332,640

Int. Cl. B01d *37/00*

U.S. Cl. 210—65 10 Claims

1. A fibrous cellulose acetate resembling asbestos in fibrous structure and comprising rod-shaped fibers intermingled with fluffy filaments said fibers and filaments having diameters of about 0.5 microns to about 50 microns, and a surface area of about 35 $m.^2/g.$ to about 55 $m.^2/g.$, said fibrous cellulose acetate being wet with at least about 70% by weight nonsolvent for cellulose acetate.

3,842,008

GREASE COMPOSITIONS

Warner T. Carman, Morrisville, Pa., assignor to Mobil Oil Corporation

No Drawing. Filed May 18, 1973, Ser. No. 361,717

Int. Cl. C10m *5/16, 5/28, 7/52*

U.S. Cl. 252—18 20 Claims

1. A grease composition comprising an oil of lubricating viscosity, as a vehicle, and a thickening agent comprising a boric acid complex of alkaline earth metal salts of aliphatic long chain monocarboxylic and aliphatic dicarboxylic acids.

3,842,009

MOLYBDENUM DISULFIDE CONTAINING LUBRICANT

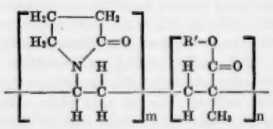
Henry F. Barry and Calvin J. Hallada, Ann Arbor, and Fred W. Moore, Plymouth, Mich., assignors to American Metal Climax, Inc.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,166

Int. Cl. C10m *1/12, 3/26, 1/32*

U.S. Cl. 252—25 9 Claims

1. A lubricant composition consisting essentially of a base oil containing from about 0.25% to about 30% molybdenum disulfide particles less than about 3 microns in size suspended therein and a dispersant present in an amount of from about 0.2 to about 0.8 parts dispersant per part molybdenum disulfide present, said dispersant consisting of a copolymer of a methacrylate ester and N-vinyl pyrrolidone of an average molecular weight of about 350,000 to about 600,000 corresponding to the formula:



wherein:

R'=an alkyl radical of C_1 to C_{22}; and

Ratio of m:n=1:5 to 1:15.

3,842,010

OIL AND FUEL COMPOSITIONS CONTAINING EPOXIDIZED TERPOLYMER DERIVATIVES

James J. Pappas, Parsippany, Norman Jacobsen, East Brunswick, and Edward N. Kresge, Watchung, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 235,439, Mar. 16, 1972. This application Mar. 2, 1973, Ser. No. 337,460

Int. Cl. C10m *1/32, 1/38*

U.S. Cl. 252—51.5 R **6 Claims**

1. A composition comprising a major amount of a hydrocarbon fuel or lubricating oil and .001 to 45 wt. percent of an oil soluble adduct of an epoxidized terpolymer, useful as a lubricant or fuel additive, said terpolymer having a molecular weight in the range of 10,000 to 1,000,000 viscosity average molecular weight and comprising in the range of about 30 to 85 mole percent ethylene, about 14.5 to about 69.5 mole percent of a C_3 to C_8 alpha monoolefin and about 0.5 to about 20 mole percent of a C_5 to C_{14} non-conjugated diolefin, wherein about 10 to 100% of the double bonds in the terpolymer have been epoxidized, and about 10 to 100% of the epoxidized groups have been reacted with a C_1 to C_{18} amine which contains 1 to 8 nitrogen atoms to form said adduct.

3,842,011

PROCESS FOR PREPARING FERROMAGNETIC CHROMIUM DIOXIDE

Yasuhiko Fukuda, Chiba, and Isao Osada, Kanagawa, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 47,891, June 19, 1970. This application Jan. 31, 1973, Ser. No. 328,167

Claims priority, application Japan, June 20, 1969, 44/48,288, 44/48,289, 44/48,290, 44/48,291, 44/48,292, 44/48,293, 44/48,294

Int. Cl. C04b *35/12;* **C01g** *37/02*

U.S. Cl. 252—62.51 **12 Claims**

1. A process for preparing a ferromagnetic chromium dioxide having a rutile-type crystal structure, said process producing said ferromagnetic chromium dioxide independently of the pressure existing during said process, said process comprising calcining a dry mixture which consists essentially of chromium oxide and at least 0.01 mole per mole of said chromium oxide of a nitrate selected from the group consisting of calcium nitrate, strontium nitrate, lead nitrate and mixtures thereof at a temperature of from 350 to 500 C. at atmospheric pressure, the chromium of said chromium oxide having an average valence of greater than 4, to thereby produce said ferromagnetic chromium dioxide.

3,842,012

METHOD OF MANUFACTURING AN OXIDE OF YTTRIUM AND/OR LANTHANUM AND/OR THE LANTHANIDES

Johannes Josephus Marie Hoppenbrouwers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Dec. 14, 1972, Ser. No. 314,942

Claims priority, application Netherlands, Dec. 27, 1971, 7117857

Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 R **7 Claims**

1. A method of preparing a monocrystalline oxide of increased particle size of at least one element selected from the group consisting of yttrium, lanthanum and the lanthanides comprising preparing a mixture of a polycrystalline powder of at least one of said oxides and from 0.1 to 2 mol per mol of said oxides of at least one carbonate of an alkali metal selected from the group consisting of sodium, potassium, rubidium and cesium and heating said mixture at a temperature of about 1000° C. to 1400° C.

3,842,013

POLYELECTROLYTE FLUIDIZED AQUEOUS SUSPENSIONS

Robert Ben Booth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Application July 27, 1970, Ser. No. 58,338, now Patent No. 3,741,641, which is a continuation-in-part of application Ser. No. 179,287, Mar. 7, 1962, now Patent No. 3,524,682, which in turn is a continuation-in-part of application Ser. No. 698,429, Nov. 25, 1957. Divided and this application Nov. 17, 1972, Ser. No. 307,664

Int. Cl. B01j *13/00*

U.S. Cl. 252—315 **4 Claims**

1. A fluidized resuspendable mineral suspension pulp containing solids larger than 65 mesh and fines smaller than 325 mesh and substantially homogeneous throughout in which the fines are integrated with the coarse material by from 0.005 to 5 pounds per ton of solids of a water soluble polyelectrolyte, which is an ampholytic linear carbon chain vinyl polymer consisting essentially of recurring carbamylethylene and carboxyethylene linkages and not more than a minor amount of nitriloethylene linkages and salts thereof, having a weight average molecular weight in excess of 100,000, thereby producing a suspension which is of uniform characteristics, from which the solids drop out as an unclassified readily resuspendable thixotropic material, said polymer increasing the viscosity of the aqueous phase, insuring laminar flow at higher velocities, thereby reducing pumping power requirements, and simultaneously stabilizing the suspension, so that during interruptions in agitation, the suspension remains fluidized, and in pumpable condition.

3,842,014

GRAPHITE PELLETS

Gordon Charles Friend, Richmond, Charles John Geach, Shepperton, and Aleksander Jerzy Groszek, London, England, assignors to The British Petroleum Company, Limited, London, England

No Drawing. Filed Sept. 18, 1972, Ser. No. 289,835

Claims priority, application Great Britain, Sept. 28, 1971, 45,046/71

Int. Cl. C10g *25/00*

U.S. Cl. 252—447 **3 Claims**

1. Graphite/alumina pellets consisting essentially of a gas or vacuum ground graphite of surface area 50–2000 square metres per gram, and, as a binder, alumina of pseudoboehmite structure of crystalline size less than 10 nanometres and of surface area 200–600 square metres per gram.

3,842,015

ALUMINATE SUPPORTED CATALYTIC COMPOSITION AS AN EXHAUST GAS CATALYST

Wilhelm Vogt, Hurth-Efferen, Hermann Glaser, Lechenich, and Helmut Dyrschka, Kottingen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Nov. 17, 1972, Ser. No. 307,586

Claims priority, application Germany, Nov. 20, 1971, P 21 57 625.0; Dec. 29, 1971, P 21 65 241.5

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R **9 Claims**

1. A carrier-supported catalyst, wherein the active ingredients consist essentially of oxides of copper, manga-

nese, nickel and optionally cobalt and wherein the atomic proportions of copper to manganese to the sum of nickel and cobalt are between 0.2–5, 0.2–5 and 0.1–2, the catalyst containing as the carrier an aluminate of at least one alkaline earth metal selected from the group consisting of barium, strontium, calcium and mixtures thereof.

ERRATUM

For Class 252—455 see:
Patent No. 3,842,114

3,842,016

THERMALLY ACTIVATED CRYSTALLINE ALUMINOSILICATES

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of abandoned application Ser. No. 72,351, Sept. 15, 1970, which is a continuation-in-part of application Ser. No. 17,974, Mar. 9, 1970, now Patent No. 3,706,694, which is a continuation-in-part of application Ser. No. 761,321, Sept. 20, 1968, which in turn is a continuation-in-part of application Ser. No. 681,561, Nov. 11, 1967, both now abandoned. This application Mar. 12, 1973, Ser. No. 340,179

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **17 Claims**

1. The method of preparing a hydrocarbon conversion catalyst containing an aluminosilicate zeolite characterized by increased hydrocarbon conversion activity including the steps of thermally activating an unactivated form of said zeolite by heating from a temperature below about 500° F. to a temperature above about 900° F. within about one-half hour or less and retaining said zeolite at a temperature in excess of about 900° F. for a period of at least about 10 minutes sufficient to thermally activate said zeolite in the substantial absence of hydrocarbons.

3,842,017

PROCESS FOR DEPOSITING NOBLE METAL CATALYSTS ON OXIDE CARRIERS

William H. Armistead and Thomas H. Elmer, Corning, and Ivan E. Lichtenstein, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,704

Int. Cl. B01j *11/08, 11/12, 11/20*

U.S. Cl. 252—474 **3 Claims**

1. In a process for depositing a noble metal catalyst on a refractory metal oxide carrier which comprises the step of contacting the refractory metal oxide carrier with a solution containing a formic acid reductant and noble metal ions selected from the group consisting of platinum, palladium, rhodium, gold, silver and mixtures thereof, the improvement which comprises the addition of urea to the solution in an amount ranging about 1–10% by weight thereof.

3,842,018

OXIDE VARISTOR COMPOSITION CONSISTING OF ZnO, Sb_2O_3 AND/OR Sb_2O_5, ZrO_2, TiO_2 AND/OR GeO_2, AND Bi_2O_3

Noboru Ichinose, 1826–2 Mutsuura-cho, Kanazawa-ku, Yokohama-shi, Japan, and Yuhji Yokomizo, 57–10, 2-chome, Komazawa, Setagaya-ku, Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,713

Int. Cl. H01c *9/00*

U.S. Cl. 252—520 **1 Claim**

1. An oxide varistor comprising a basic composition (totaling 100 mol percent) consisting of 87 to 12 mol percent of ZnO, 1 to 30 mol percent of antimony oxide selected from the group consisting of Sb_2O_3, Sb_2O_5 and a mixture thereof and 12 to 87 mol percent of at least one metal oxide selected from the group consisting of ZrO_2, TiO_2 and GeO_2, and an additive consisting of of 0.5 to 10% by weight of Bi_2O_3 based on said basic composition.

3,842,019

USE OF SULFONIC ACID SALTS IN CATIONIC POLYMERIZATION

James E. Kropp, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 216,744, Jan. 10, 1972, which is a continuation-in-part of application Ser. No. 813,758, Apr. 4, 1969, both now abandoned. This application Mar. 1, 1973, Ser. No. 336,939

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 EP **23 Claims**

1. The process comprising the steps of mixing cationic sensitive monomer with a catalyst consisting of sulfonic acid salt and heating the resulting mixture at 120 to 425° F. to effect cure thereof in the absence of halide promoter, photoreducible ketone, or without requiring actinic light, wherein said monomer is an ethylenically unsaturated hydrocarbon, an ethylenically unsaturated compound having an oxygen or nitrogen atom attached to one of the carbon atoms of a carbon-to-carbon double bond or is polymerizable by ring opening of cyclic groups containing a hetero oxygen or nitrogen ring atom, and is selected from the group consisting of vicinal epoxides, vinyl ethers, N-vinyl compounds, aziridines, ethylenically unsaturated hydrocarbons and acetals and said sulfonic acid salt has the formula $(R_fSO_3)_nM$, where R_f is fluoroalkyl having 1 to 18 carbon atoms, M is ammonium cation, quaternary ammonium cation, cation of amine, or cation of metal selected from Groups I to V and VIII, subgroups VI–B and VII–B, and lanthanide and actinide series of metals of the Periodic Table, and n is an integer equal to the valence of M.

3,842,020

METHOD OF EXPANDING A RESOLE RESIN CONTAINING EXPANDABLE THERMOPLASTIC MICROSPHERES AND PRODUCT OBTAINED THEREFROM

Walter L. Garrett, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 196,746, Nov. 8, 1971. This application June 18, 1973, Ser. No. 371,083

Int. Cl. C08g *53/10;* **B01j** *13/02*

U.S. Cl. 260—2.5 B **20 Claims**

1. A method for the preparation of thermoset synthetic resinous resole foam compositions, the steps of the method comprising

providing in intimate admixture (a) a resole resin having a viscosity of from 300 to 100,000 centipoises at 25° C. when the water content of the resin is 15 percent by weight, (b) a catalyst for the resole resin, the catalyst comprising a strong inorganic or organic acid, (c) a plurality of synthetic resinous thermoplastic expandable microspheres, the microspheres comprising a synthetic resinous thermosplastic shell of a polymer containing at least 50 percent by weight vinylidene chloride and at least one ethylenically unsaturated monomer copolymerizable therewith, having encapsulated therein a volatile liquid foaming agent,

confining the mixture within a mold of desired configuration, and

curing the mixture until the mixture has hardened to a self-supporting mass containing a plurality of closed, gas-filled cells having diameters from 10 to 100 microns.

3,842,021
THERMOSETTING POLYESTER POWDER COATING COMPOSITIONS

Peter M. Grant, Robert B. Taylor, and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,872
Int. Cl. C08b *21/08*; C08g *37/34*
U.S. Cl. 260—15 **10 Claims**

1. A thermosetting coating composition in the form of a powder having an average particle size range of from about 10 to about 300 microns comprising

(a) a polyester derived from a dicarboxylic acid component, at least 50 mole percent of which is terephthalic acid or isophthalic acid, a glycol component, at least 50 mole percent of which is neopentyl glycol, and from about 2 to about 10 mole percent of a polyol containing from 4 to 16 carbon atoms and having at least 3 primary hydroxyl groups,

(b) from about 2 to 15 phr. by weight of a melamine cross-linking agent, and

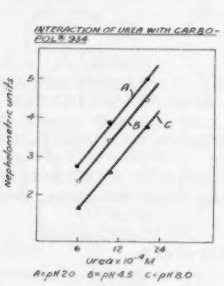
(c) from about 0.1 phr. to about 3.0 phr. by weight of the reaction product of an acid and a compound containing oxirane groups,

said polyester being free of appreciable crosslinking.

3,842,022
POLYMERIC ACRYLIC ACID-UREA COMPLEXES AND PREPARATION

Samuel S. M. Wang, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1973, Ser. No. 386,243
Int. Cl. A61k *27/00*; C08b *25/00*; C08f *27/08*; C08g *22/02*
U.S. Cl. 260—17.4 SG **4 Claims**



1. An inclusion compound of urea and a colloidally water-soluble polymer of acrylic acid crosslinked with approximately 1% of a polyhydroxy compound having at least 3 and preferably not more than about 8 hydroxyl groups, wherein the hydrogen atoms of at least 3 hydroxyl groups are replaced with allyl groups, the inclusion compound having a molar proportion of urea to polymer mer units of about 12.8 to 1.

3,842,023
POLYMERIC SOLDER COMPOSITION

Taki J. Anagnostou, Livonia, Norman B. Dixon, Grosse Isle, and Gundu M. Sastry, Trenton, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 188,506, Oct. 12, 1971. This application June 25, 1973, Ser. No. 373,573
Int. Cl. C08g *41/04*
U.S. Cl. 260—23.7 H **6 Claims**

1. A sealant composition produced by heating to a minimum temperature of about 190° F. a mixture comprising (a) an olefinically unsaturated liquid polymer of a C_4–C_8 diolefinic hydrocarbon compound, a major proportion of molecules of said polymer being characterized by the presence of two separated and terminally located allylic bromide groups within their structure, (b) a liquid epoxy compound having an equivalent weight in the range of about 170 to 210, and (c) a polyfunctional amine terminated polyamide having an amine equivalent weight of about 130 to 160, said olefinically unsaturated liquid polymer and said liquid epoxy compound being present in said mixture in the weight ratio of (a) to (b) of from 30:70 to 70:30, and wherein there is from about one to five parts of said amine terminated polyamide for each five combined parts of said polymer and epoxy compound.

3,842,024
POLYEPOXYETHER AND BITUMEN COMPOSITIONS

Jean Philippe Rieux, Decines, and Jean Lehureau, Lyon, France, assignors to Rhone-Progil, Courbevoie, France

No Drawing. Filed June 7, 1971, Ser. No. 150,743
Claims priority, application France, June 5, 1970, 7020658
Int. Cl. C08g *30/02, 51/52*
U.S. Cl. 260—28 **8 Claims**

1. A solvent-free hardened composition consisting essentially of:

(1) 10–50 percent by weight, based on the weight of the composition, of bitumen having a penetrability index of from 20 to 300;

(2) 29 to 59 percent by weight, based on the weight of the composition, of a polyepoxyether having reactive epoxy end groups consisting of the condensation product of $(n+1)$ moles of a diepoxy compound with n moles of a polyol, said diepoxy compound being a condensation product of a diphenol with an epihalohydrin and having an epoxidic oxygen content of from 50 to 100 percent of the theoretical value; and

(3) 16 to 32 percent by weight, based on the weight of the composition, of a hardener capable of hardening the composition selected from the group consisting of amines, aminoamides, an amidoamine of polymerized linoleic acid and a hydrolysable imine.

3,842,025
PROCESS FOR THE PREPARATION OF LOW-VISCOSITY, LOW-ODOROUS STYRENE/BUTADIENE POLYMER DISPERSIONS CONTAINING CARBOXYL GROUPS

Herbert Schlüter, Marl, Germany, assignor to Chemische Werke Huls AG, Marl, Germany

No Drawing. Continuation of abandoned application Ser. No. 106,908, Jan. 15, 1971. This application Apr. 9, 1973, Ser. No. 349,194
Claims priority, application Germany, Jan. 19, 1970, P 20 02 094.4
Int. Cl. C08f *27/08*
U.S. Cl. 260—29.7 PT **12 Claims**

1. In a process for the preparation of a polymer by polymerizing in an aqueous dispersion a monomeric mixture consisting essentially of on a weight percent basis, 20–80 of a conjugated diolefin, 15–80 of a vinyl monomer, and 0.5–8 of a carboxylic acid having ethylenic unsaturation α to the carboxy group and copolymerizable with the vinyl or conjugated diene monomer, said polymerization being conducted at an initial pH of about 1.5–3.6 and at a temperature no greater than 100° C., and thereafter raising the pH of the polymer dispersion by the addition of a base thereto, the improvement which comprises conducting the polymerization for 6–12 hours, after the polymerization, neutralizing from 15–55% only of the carboxyl group of the thus produced polymer with the base, and then agglomerating the dispersion of partially

neutralized polymer, thereby producing a relatively odorless, low viscosity aqueous polymeric dispersion.

3,842,026

AROMATIC PART-CURED POLYIMIDE MOULDING POWDERS

David Rodney Dixon, Dunstable, England Cecil Nigel Turton, Darien, Conn., and Ian Gabriel Williams, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 132,185, Apr. 7, 1971. This application Mar. 22, 1972, Ser. No. 236,975

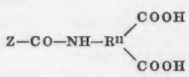
Claims priority, application Great Britain, Apr. 17, 1970, 18,473/70; June 18, 1970, 29,625/70; Nov. 4, 1970, 52,446/70; Feb. 16, 1971, 4,725/71; Aug. 16, 1971, 38,289/71; Canada, Mar. 30, 1971, 109,141

Int. Cl. C08g *20/32, 51/44, 51/46*
U.S. Cl. 260—30.8 R **14 Claims**

1. A process for the manufacture of a part-cured polyimide prepolymer having an "available weight loss" between 2 and 15% comprising heating (a) a mixture of at least one aromatic acidic monomer with at least one aromatic amino compound or (b) an aromatic amino carboxylic compound at a temperature of at least 200° C. in the presence of a dipolar aprotic solvent having a boiling point of at least 200° C. and a melting point of at least 0° C. until the "available weight loss" of the product is between 2 and 15%, thereafter discontinuing said heating and granulating said part-cured polyimide prepolymer, wherein said aromatic acidic monomer comprises (i) an aromatic tetracarboxylic acid or the corresponding tetracarboxylic dianhydride or di- or tetra-esters derived therefrom or (ii) an aromatic tricarboxylic acid or the corresponding tricarboxylic anhydride or the mono-, di- or tri-esters derived therefrom, said tetracarboxylic acid having its carboxylic groups arranged in pairs with each pair of carboxylic groups being attached to adjacent nuclear carbon atoms or being in a *peri* relationship to one another and said tricarboxylic acid having two of its carboxyl group in *ortho* or *peri* relationship, said aromatic amino compound has the general formula

$$Z—CO—NH—R^{I}—NH—CO—Z'$$

and wherein said aromatic aminocarboxylic compound has the general formula



or is the corresponding dianhydride, mono- or di-ester thereof; in which formulae R^{I} is a bivalent radical of aromatic character, R^{II} is a tervalent radical of aromatic character with carboxyl groups in *ortho* or *peri* relationship, —CO—Z and —CO—Z′ are acyl groups or Z and Z′ are groups of the formula $—OR^{III}$ wherein R^{III} is a monovalent aliphatic or aromatic radical free from terminal or pendent methylene groups.

3,842,027

VINYL CHLORIDE POLYMER POWDERS

Stanley Hamilton Richardson, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 26, 1973, Ser. No. 373,842

Int. Cl. C08f *15/30, 45/38*
U.S. Cl. 260—31.8 R **4 Claims**

1. A free flowing powder comprising from 75 to 82 parts by weight of a vinyl chloride/vinyl acetate/maleic acid terpolymer and from 18 to 25 parts by weight of a plasticizer ditridecyl phthalate, triisodecyl trimellitate, or mixtures thereof, the monomers being present in said terpolymer in amounts of about from 78 to 88/11 to 19/0.1 to 3 weight percent respectively.

3,842,028

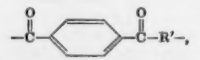
PROCESS FOR PREPARING SPINNING SOLUTIONS OF POLYHYDRAZIDES

Frank Dobinson, Gulf Breeze, and Chris A. Pelezo, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

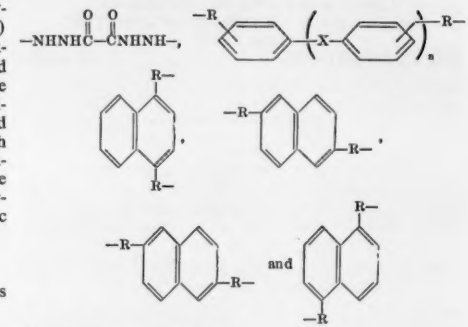
No Drawing. Continuation-in-part of abandoned application Ser. No. 273,069, July 19, 1972. This application May 24, 1973, Ser. No. 363,456

Int. Cl. C08g *33/04*
U.S. Cl. 260—326 NA **4 Claims**

1. A polymer spinning solution having a viscosity between 1,000 and 40,000 poise consisting essentially of a solvent selected from the group consisting of N,N-dimethylacetamide, N-methylpyrrolidone or mixtures thereof containing at least 3.0 percent by weight of a polymer having an inherent viscosity of at least 3.0, and 2 to 7 percent of weight of lithium chloride, said polymer having recurring units of the formula

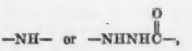


wherein R′ is selected from the group consisting of

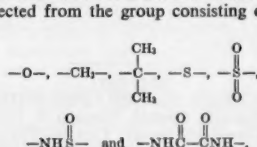


wherein the bonds of each

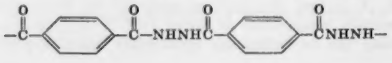
radical are meta or para oriented to one another, R is



n is zero or one and X is a covalent bond or a divalent radical selected from the group consisting of



with the proviso that at least 90 mole percent of said polymer units are of the formula



3,842,029
SYNTHETIC RESIN COMPOSITIONS

Kunio Saito, Yokohama, Tatsuo Ishii, Suita, and Shigetoshi Seta, Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 16, 1973, Ser. No. 333,292

Claims priority, application Japan, Feb. 29, 1972, 47/20,136

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **4 Claims**

1. An improved synthetic resin composition comprising:

(I) 10–150 parts by weight based on 100 parts of the total amount of (II)+(III) of glass fiber,

(II) 99–50 parts by weight based on 100 parts of the total amount of (II)+(III) of at least one polyamide resin selected from the group consisting of nylon 6, nylon 7, nylon 11, nylon 12, nylon 66, nylon 610 and nylon 612, and

(III) 1–50 parts by weight based on 100 parts of the total amount of (II)+(III) of thermoplastic block copolymer of conjugated diolefin-monovinyl aromatic hydrocarbon having the general formula of

$$(B—S)_n,$$

$$(B—S)_n—B$$

or

$$(S—B)_n—1^{-S}$$

wherein, B is substantially conjugated diolefin polymer block, S is monovinyl aromatic hydrocarbon block, and n is a whole number of from 2 to 5, the molecular weight of said block copolymer being from 5,000 to 500,000 and the content of said vinyl aromatic hydrocarbon being from 10 to 70 weight percent.

3,842,030
PROCESS FOR PREPARING COLORED SYNTHETIC LEATHER

Shigeo Maeda, Minoru Ozutsumi, Isao Niimura, and Hideo Okazaki, Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

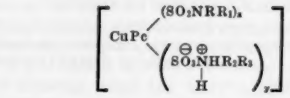
No Drawing. Filed July 5, 1973, Ser. No. 376,365

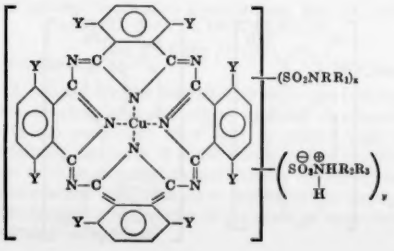
Claims priority, application Japan, July 26, 1972, 47/74,162

Int. Cl. C08g *51/66*

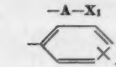
U.S. Cl. 260—37 N **10 Claims**

1. In a process for preparing a colored polyurethane leather by reacting a polyisocyanate with a polyol or a polyurethane, the improvement which comprises reacting said polyisocyanate with a copper phthalocyanine dye having the formula

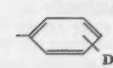




wherein Y is hydrogen or chlorine; R represents hydrogen, alkyl or hydroxyalkyl, R_1 represents

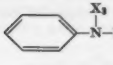


(2)

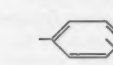


(3)

(4)

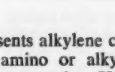


(5)



(6)

or



(7)

wherein A represents alkylene connected to X_1, X_1 represents hydroxyl, amino or alkylamino, B represents an alkylene group connected to X_2, X_2 represents hydroxyl; D represents —SO_2— or —CO—, X_3 represents hydrogen, alkyl or hydroxyalkyl, X_4 represents amino, alkylamino or hydroxyl substituted alkyl amino, R_2 represents hydrogen or alkyl, R_3 represents alkyl or alkylamino; x represents an integer from 1–4; y represents 0 or an integer from 1–3 and $x+y$ is 1, 2, 3, or 4.

3,842,031
FRICTION MATERIAL

John B. Lumb, Bradford, and Michael Edwards, Leeds, England, assignors to BBA Group Limited, Cleckheaton, Yorkshire, England

No Drawing. Continuation-in-part of application Ser. No. 133,765, Apr. 13, 1971, now Patent No. 3,723,382. This application Nov. 28, 1972, Ser. No. 310,001

Claims priority, application Great Britain, Nov. 29, 1971, 55,315/71

The portion of the term of the patent subsequent to Mar. 27, 1990, has been disclaimed

Int. Cl. C08g *51/04*

U.S. Cl. 260—38 **15 Claims**

1. A compacted friction material comprising nickel sulphide formed in situ from 15% to 85% by weight of finely divided nickel and 5% to 65% by weight of antimony sulphide, and 5% to 45% by weight of at least one material selected from the group consisting of fillers and friction modifiers.

3,842,032
METHOD OF COLORING UNSATURATED POLYESTER RESIN SHAPED ARTICLE

Katsuo Sato and Yoshio Imae, Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Sept. 7, 1972, Ser. No. 287,021

Claims priority, application Japan, Sept. 7, 1971, 46/68,490

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **7 Claims**

1. A method of coloring an unsaturated polyester resin shaped article, which comprises coloring a low-shrinkage unsaturated polyester resin with a carbon black-polymer composition produced by reacting carbon black with a vinyl monomer compatible with the unsaturated polyester resin in the presence of a free radical polymerization initiator.

3,842,033
FLAME RETARDANTS FOR POLYMERS

Donnie G. Brady, Ernest A. Zuech, and Roy A. Gray, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 146,456, May 24, 1971. This application Aug. 8, 1973, Ser. No. 386,576

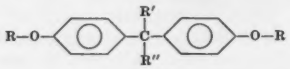
Int. Cl. C08f *45/46*

U.S. Cl. 260—45.75 B **10 Claims**

1. A polymeric composition comprising:

(a) a polymer selected from the group consisting of polyolefins, polyamides, and polystyrenes; and

(b) 0.5 to 15 parts by weight per 100 parts by weight of said polymer of a compound having the general formula



wherein R is a 2,3-dibromo alkyl radical containing 3–10 carbon atoms, and R′ and R″ are hydrogen or alkyl radicals having 1–6 carbon atoms.

3,842,034
RUBBER COMPOSITIONS

Makoto Fujimori, Hiroshi Yoshii, Noboru Kusakabe, Muneo Matsubara, Masaru Ito, and Yutaka Baba, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,603

Claims priority, application Japan, Mar. 24, 1972, 47/28,899

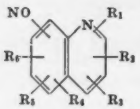
Int. Cl. C08c *11/52*

U.S. Cl. 260—45.8 N **7 Claims**

1. A vulcanizable composition comprising

a rubber having unsaturated double bonds in the molecule and

a nitroso-quinoline compound having the general formula



wherein R_1, R_2, R_3, R_4, R_5, and R_6 may be the same or different and are selected from the group consisting of hydrogen, hydroxyl group, alkyl, aralkyl, cycloalkyl and aminoalkyl radicals having up to 15 carbon atoms.

3,842,035
POWDER COATING COMPOSITION

Cornelis H. J. Klaren, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,205

Claims priority, application Great Britain, Oct. 1, 1971, 45,791/71

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **9 Claims**

1. A heat curable powder coating composition which cures to a matt finish comprising (A) one part by weight of a powder composition comprising a polyepoxide having more thane one oxirane group and a latent epoxy curing agent, said composition having a gel time of from 6 to 30 minutes and (B) from 0.5 to 5 parts by weight of a powder composition comprising a polyepoxide having more than one oxirane group, a latent epoxy curing agent, and a curing accelerator, the ratio of the gel time of (A) to (B) being no more than 20.

3,842,036
B-STAGED POLYURETHANE-ISOCYANURATES FROM ALKYLENE OXIDE CONDENSATE OF NOVOLAK RESINS

Sui-Wu Chow, Somerville, and Markus Matzner, Edison, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 238,588, Mar. 27, 1972, now Patent No. 3,723,367. This application Jan. 31, 1973, Ser. No. 328,369

Int. Cl. C08g *22/14, 33/02*

U.S. Cl. 260—47 CB **5 Claims**

1. A normally solid, fusible composition capable of being transformed into a thermoset composition by subjecting said fusible composition to heat, wherein said fusible composition comprises the reaction product of (a) an alkylene oxide condensate of a novolak, (b) a stoichiometric excess of an organic polyisocyanate, and (c) a catalytically effective quantity of a catalyst for promoting the formation of isocyanurate from isocyanate, wherein the reaction is interrupted by cooling before reaching thermoset stage.

3,842,037
PROCESS FOR PREPARING HIGHER MOLECULAR WEIGHT POLYEPOXIDE PRODUCTS BY CONDENSING LOWER MOLECULAR WEIGHT POLYEPOXIDE WITH POLYHYDRIC PHENOLS

Feije H. Sinnema, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 31, 1973, Ser. No. 365,675

Claims priority, application Netherlands, June 8, 1972, 7226794

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP **8 Claims**

1. In a process for preparing higher molecular weight resinous polyepoxides by condensing a lower molecular weight polyepoxide having more than one vicinal epoxy group with a polyhydric phenol in the presence of an alkaline condensation catalyst wherein the ratio of epoxide groups to phenolic hydroxyl groups is from about 1.05 to about 10, the improvement which comprises adding an inorganic acid having a pKa below about 4 in amount to neutralize said catalyst when at least 85% of the phenolic hydroxyl groups present in the starting materials have been converted.

3,842,038
PHOTOCONDUCTIVE POLYMERIC CONDENSATION PRODUCTS OF FORMALDEHYDE WITH A MULTI-NUCLEAR CARBOCYCLIC AROMATIC COMPOUND

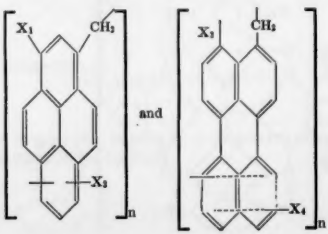
Bernd Löhr, Wiesbaden, and Heinz Herrmann, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 24, 1972, Ser. No. 274,725

Int. Cl. C08g *7/00*

U.S. Cl. 260—67 A **10 Claims**

1. A photoconductive polymer condensation product, of formaldehyde or para-formaldehyde and at least one multi-nuclear, carbocyclic aromatic compound, composed of recurrent, non cross-linked units of at least one of the following formulae



wherein

X_1 and X_2 are selected from the group consisting of hydrogen, alkyl or alkoxy with 1 to 4 carbon atoms each, or halogen,

X_3 and X_4 are selected from the group consisting of alkyl or alkoxy with 1 to 4 carbon atoms each, or halogen, and

n is an integer between about 6 and 10,

said product being soluble in tetrahydrofuran at room temperature.

3,842,039

THREE STAGE PROCESS FOR THE PREPARATION OF RESINS FROM UREA AND FORMALDEHYDE

Silvio Vargiu, Sesto San Giovanni, and Giorgio Mazzoleni and Ugo Nistri, Milan, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy

No Drawing. Filed Dec. 27, 1972, Ser. No 318,793

Claims priority, application Italy, Dec. 27, 1971, 32,957/71

Int. Cl. C08g *9/10*

U.S. Cl. 260—69 R **6 Claims**

1. Process for the continuous preparation of urea formaldehyde resins characterised:

in a first stage of reaction, by the supply of urea and formaldehyde in molar ratios of formaldehyde to urea of 2:1 to 2.7:1 and in that stage working at temperatures of 60 to 95° C. with the pH of the aqueous reaction medium ranging from 8 to 9.5, the contact time being from 15 to 50 minutes;

by supplying the product from the first stage to a second stage of reaction together with formic acid and, in the said second stage, working at temperatures of 60 to 95° C. with a pH in the aqueous reaction medium of 4.0 to 5.5, the contact time being from 4 to 10 minutes;

by neutralising the product discharged from the second stage to a pH of 6.8 to 7.5;

by supplying the said neutralised product to a third stage of reaction together with urea and working in that third stage with molar ratios of formaldehyde to urea of 1.40:1 to 1.65:1, at temperatures of 60 to 95° C. with a pH in the reaction medium of 5.7 to 6.8 and the contact time being between 60 and 240 minutes;

by cooling the urea formaldehyde resin discharged from the third stage and bringing its pH value to approximately 8.

3,842,040

MANUFACTURE OF POLYESTERS

Anthony Arthur Briarly Browne and James Eric McIntyre, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 9, 1973, Ser. No. 377,184

Claims priority, application Great Britain, July 21, 1972, 34,202/72; Nov. 14, 1972, 52,551/72

Int. Cl. C08g *17/003*

U.S. Cl. 260—75 M **20 Claims**

1. A process for the manufacture of a poly(alkylene arylene dicarboxylate) wherein an aromatic dicarboxylic acid in the particulate solid state is reacted with an ester-forming derivative of a diol having no free hydroxyl groups to form a poly(alkylene arylene dicarboxylate), wherein reaction conditions are so controlled that throughout the reaction a major part of the reaction mass forms a particulate solid phase.

3,842,041

SOLID STATE MANUFACTURE OF POLYESTERS

Anthony Arthur Briarly Browne and James Eric McIntyre, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 13, 1973, Ser. No. 378,937

Int. Cl. C08g *17/003*

U.S. Cl. 260—75 M **20 Claims**

1. A process for the manufacture of poly(alkylene arylene dicarboxylate) wherein an aromatic dicarboxylic acid in the particulate solid state is reacted with a diol or a diol monoacylate to form a poly(alkylene arylene dicarboxylate), wherein reaction conditions are so controlled that throughout the reaction a major part of the reaction mass forms a particulate solid phase.

3,842,042

FILM FORMING POLYURETHANES

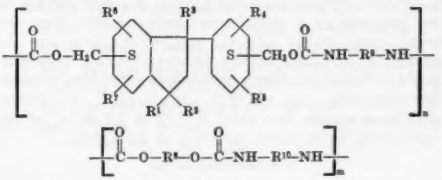
John C. Wilson and Frederick Hamb, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Nov. 1, 1971, Ser. No. 194,506, now Patent No. 3,769,264. Divided and this application Mar. 28, 1973, Ser. No. 345,623

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AP **5 Claims**

1. A film forming polyurethane comprising a polymer having the structure:



wherein;

n is a mole fraction and is a positive number less than or equal to 1;

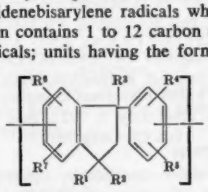
m is a mole fraction and equals $1 - n$;

R^1 and R^3 are independently selected from the group consisting of hydrogen and alkyl radicals, of from 1 to 6 carbon atoms;

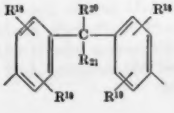
R^2 is an alkyl radical from 1 to 6 carbon atoms;

R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen, aryl radicals, halogen atoms, nitro radicals, cyano radicals, amino radicals, and alkoxy radicals;

R^8, R^9 and R^{10} are independently selected from the group consisting of alkylene radicals of from 2 to 10 carbon atoms, arylene radicals, arylenebisalkylene radicals wherein the alklylene portion has 1 to 6 carbon atoms, cycloalkylene radicals, alkylenebisarylene radicals wherein the alkylene portion contains 1 to 12 carbon atoms, alkylidenebisarylene radicals wherein the alkylidene portion contains 1 to 12 carbon atoms, arylenealkylene radicals; units having the formula:



and the units having the formula:



wherein R^{18} and R^{19} are independently selected from the group consisting of hydrogen atoms, aryl radicals, halogen atoms, nitro radicals, amino radicals, cyano radicals and alkoxy radicals and R^{20} and R^{21} are independently selected from the group consisting of hydrogen atoms, alkyl radicals, of from 1 to 16 carbon atoms, cycloalkyl radicals of from 4 to 6 carbon atoms, aryl radicals having from 6 to 20 carbon atoms and wherein R^{20} and R^{21} taken together with the carbon atom to which they are attached can represent a monocyclic, polycyclic or heterocyclic moiety having from 4 to 15 atoms in the ring system.

3,842,043

PROCESS FOR PREPARING POLYESTERS IN THE PRESENCE OF AN IMPROVED POLYCONDENSATION CATALYST

Kazuya Chimura, Kazuo Ito, Shunichi Takashima, and Masao Kawashima, Otake, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 10,260, Feb. 10, 1970. This application Mar. 14, 1973, Ser. No. 340,996

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **6 Claims**

1. A process for preparing polyesters comprising polycondensing at least one glycol terephthalate in the presence of a polycondensation catalyst which is prepared by dissolving germanium dioxide in a glycol solvent in the presence of a solubilizing agent selected from the group consisting of calcium, magnesium, strontium and zinc, and formates, acetates, benzoates, linear polyphosphates, citrates, oxalates, methoxides, ethoxides, propoxides, butoxides and ethylene glycoxides of the above-mentioned metals, in a ratio of 0.25 to 2.0 atoms of the solubilizing agent metal per atom of germanium.

3,842,044

PROCESS FOR PRODUCING SULTONE- OR HYDROXYALKANESULFONATE-MODIFIED POLYAMIDES

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,262

Int. Cl. C08g *20/20, 20/38*

U.S. Cl. 260—78 R **3 Claims**

1. In producing a fiber forming polyamide consisting essentially of the fiber forming aliphatic polycarbonamide product of a dicarboxylic acid and a diamine, or a salt of a dicarboxylic acid and a diamine, a method for improving the dyeability of the resultant polymer comprising incorporating into said polyamide from about 0.05 to about 5 mole percent 1,3-propanesultone.

3,842,045

AMORPHOUS POLYAMIDES FROM BIS(4-AMINOCYCLOHEXYL)METHANE AND A MIXTURE OF STRAIGHT CHAIN DICARBOXYLIC ACIDS

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 5, 1972, Ser. No. 269,095

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **8 Claims**

1. A substantially amorphous, optically clear solid polyamide resin consisting essentially of the polymeric condensation reaction product of (a) bis(4-aminocyclohexyl)methane of 40–54 percent trans,trans configuration and (b) a mixture of 50–70 mole percent dodecanedioic acid and 50–30 mole percent suberic acid or a mixture of 50–70 mole percent dodecanedioic acid and 50–30 mole percent azelaic acid.

3,842,046

POLYAMIDES OF TRIMETHYLHEXAMETHYLENEDIAMINE CYCLOALIPHATIC DICARBOXYLIC ACID AND CARBOCYCLIC AROMATIC DICARBOXYLIC ACID

Karl Schmitt, Herne, Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, Germany, assignors to VEBA-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

No Drawing. Original application June 26, 1969, Ser. No. 836,950, now Patent No. 3,692,749. Divided and this application July 14, 1972, Ser. No. 271,896

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **3 Claims**

1. Polyamide consisting essentially of polymeric condensation product of (1) 2,4,4-trimthylhexamethylenediamine, 2,2,4-trimethylhexamethylenediamine, or a mixture thereof, (2) 1,4-cyclohexane dicarboxylic acid, 1,3-cyclohexane dicarboxylic acid or a mixture thereof, and (3) benzene dicarboxylic acid, the cyclohexane and benzene dicarboxylic acids being in the molar ratio of 25:75 to 75:25, said polyamide having a numerical average molecular weight greater than 15,000 as determined by measuring the reduced viscosity of said polyamide in a 1% solution in pure formic acid at 20° C.

3,842,047

HYDROGEN TRANSFER POLYMERIZATION OF 2-PYRROLIDONE WITH ANIONIC CATALYST

Stephen F. Pusztaszeri, P.O. Box 1181, Port Chester, N.Y. 10573

No Drawing. Continuation-in-part of abandoned application Ser. No. 237,173, Mar. 22, 1972. This application Mar. 22, 1973, Ser. No. 344,036

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 P **12 Claims**

1. Process for the polymerization of substantially pure, substantially anhydrous 2-pyrrolidone which comprises the steps of:

(a) mixing the 2-pyrrolidone with a substantially anhydrous alkaline reactant selected from the group consisting of alkali metals, alkali metal hydroxides and alkali metal bicarbonates in a mole ratio of from about 10:1 to 27:1;

(b) heating said mixture under vacuum to a temperature of from 100° to 120° C. to react the alkaline reactant with the 2-pyrrolidone and form a mixture comprising 2-pyrrolidone and the alkali metal salt of 2-pyrrolidone and to distill off the water formed in the reaction mixture;

(c) cooling the reaction mixture to room temperature;

(d) bubbling a dry gas selected from the group consisting of carbon dioxide, nitrogen dioxide and sulfur dioxide through the previously cooled reaction mixture in an amount sufficient to react with substantially all of the metal in the 2-pyrrolidone salt;

(e) mixing the mixture of step (d) with between about 1–5% by weight, based upon the weight of the reaction mixture, of an inert drying agent; and

(f) heating to a temperature of from 48° C. to 52° C. for at least about 40 hours to produce a filament forming polymer.

3,842,048

FIRE RETARDANT CROSSLINKED COPOLYMERS

Jung Il Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

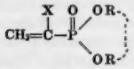
No Drawing. Original application Oct. 28, 1970, Ser. No. 84,871, now Patent No. 3,726,839, dated Apr. 10, 1973. Divided and this application Sept. 21, 1972, Ser. No. 291,128

Int. Cl. C08f *3/62*

U.S. Cl. 260—78.5 BB **8 Claims**

1. A solid crosslinked copolymer of (1) from about 2–60%, by weight of the total copolymer, of at least one

monomer containing two or more polymerizable, ethylenically unsaturated bonds; (2) from about 3–98% by weight of at least one bis (hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, and haloaryl, C_1–C_{18} alkyl and haloalkyl, and

wherein R and R_1 are hydrocarbyl and substituted hydrocarbyl groups having non-interfering substituents, said hydrocarbyl and said substituted hydrocarbyl groups containing up to about 18 carbon atoms, inclusive, with the proviso that R and R_1 can be the same, different or conjoint; and (3) the remainder being at least one monofunctional vinyl comonomer selected from the group consisting of the vinyl halides, the vinylidene halides, the alpha-olefins, the vinyl esters of carboxylic acids, the C_1–C_{20} alkyl esters of acrylic and methacrylic acid, the arylhalo and nitro-substituted benzyl esters of acrylic and methacrylic acid, the ethylenically unsaturated monocarboxylic acids, the ethylenically unsaturated dicarboxylic acids, their anhydrides and their C_1–C_2° mono- and dialkyl esters, the amides of ethylenically unsaturated carboxylic acids, the vinyl aryl compounds, and the C_1–C_{20} alkyl vinyl ethers, said monofunctional vinyl comonomer being present in an amount up to about 90% by weight.

3,842,049

METHOD OF PRODUCING AN IMPROVED POLYCARBONAMIDE BY INCORPORATING THEREIN A CHLOROHYDRIN ETHER OR DERIVATIVE THEREOF

Isao Kimura, Suita, Fumimaro Ogata, Osaka, and Koichiro Ohtomo, Takatsuki, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 120,313, Mar. 2, 1971, which is a continuation-in-part of application Ser. No. 777,864, Nov. 21, 1968, both now abandoned. This application June 12, 1973, Ser. No. 369,284

Claims priority, application Japan, Nov. 29, 1967, 42/76,921; Sept. 5, 1968, 43/63,937

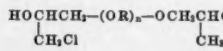
Int. Cl. C08g *20/38*

U.S. Cl. 260—78 R **5 Claims**

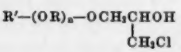
1. A method of producing an improved fiber-forming linear polycarbonamide having excellent hydrophilicity which comprises adding to

(a) at least one of fiber-forming linear polycarbonamide-forming reactants selected from the group consisting of lactams, ω-aminocarboxylic acids and salts of a dicarboxylic acid selected from the group consisting of adipic acid, sebacic acid, terephthalic acid and isophthalic acid with hexamethylenediamine

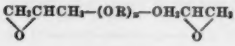
(b) at least one polyoxyalkylene glycol derivative selected from the group consisting of polyoxyalkylene glycol-bischlorohydrin ethers of the formula



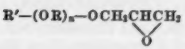
polyoxyalkylene glycol-monochlorohydrin ethers of the formula



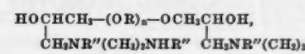
polyoxyalkylene glycol-bisglycidyl ethers of the formula



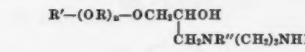
polyoxyalkylene glycol-monoglycidyl ethers of the formula



polyoxyalkylene glycol-bisaminohydrin ethers of the formula



and polyoxyalkylene glycol-monoaminohydrin ethers of the formula



wherein R is ethylene or propylene, R′ is hydrogen, methyl, ethyl, propyl, phenyl, methylphenyl or ethylphenyl, R″ is hydrogen or methyl and *n* is an integer from 4 to 454, the amount of component (b) being from 0.5% to 20% by weight of component (a) either before, during or after polycondensation of said fiber-forming linear polycarbonamide-forming reactants and then reacting the component (a) with the component (b) at a temperature of 200–280° C. for at least 5 minutes.

3,842,050

MALEIC ACID HALF ESTER TERMINATED POLYSTYRENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

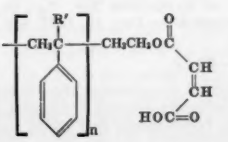
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill., assignors to CPC International Inc.

No Drawing. Application Aug. 21, 1972, Ser. No. 282,099, now Patent No. 3,786,116, which is a continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which in turn is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971, now abandoned. Divided and this application July 2, 1973, Ser. No. 376,029

Int. Cl. C08f *7/04, 27/12, 27/00*

U.S. Cl. 260—78.4 D **18 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average molecular weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R' is either hydrogen or methyl, and *n* is a positive integer having a value of at least about 20, and alkali metal salts thereof.

3,842,051

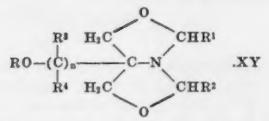
PHOTOPOLYMERIZABLE COPOLYMERIC COMPOSITIONS

Richard J. Himics, Lake Hiawatha, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

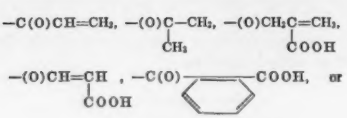
No Drawing. Continuation-in-part of application Ser. No. 44,534, June 8, 1970, now Patent No. 3,759,942. This application Sept. 25, 1972, Ser. No. 291,920

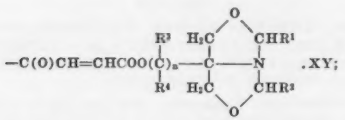
Int. Cl. C08f *19/00;* **C09d** *11/10;* **C09j** *7/02*
U.S. Cl. 260—78.5 E **18 Claims**

1. A photopolymerizable film-forming crosslinking copolymer that consists essentially of (a) about 1–99 percent by weight of units derived from an ethylenically unsaturated monomer and (b) about 1–99 percent by weight of units derived from a compound having the structure



wherein R is





R^1, R^2, R^3, R^4 is each —H, C_6H_5, an alkyl group of 1 to 20 carbon atoms, an aryl or an alkyl group having halogen, mercaptan, disulfide, alkene, peroxy, carbonyl, amide, amine, carboxyl, or hydroxyl substitution and may be the same or different, *n* is an integer of 0 to 20; XY may be absent, or X may be —H, an alkyl group of 1 to 20 carbon atoms, phenyl, benzyl, substituted phenyl, or substituted benzyl and Y may be —Cl, Br, —I, $—SO_3C_6H_4CH_3$, $—OC_6H_3(NO_2)_3$, $—HSO_4$, $—H_2PO_4$, or $—NO_3$, or Y may be absent and X may be BF_3, $FeCl_3$, or $AlCl_3$.

3,842,052

PROCESS FOR REMOVING THE SOLVENT FROM SOLUTIONS OF GUMMY POLYMERS

Silvano Gordini and Sergio Noé, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., Milan, Italy

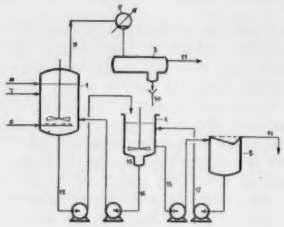
Continuation of application Ser. No. 81,476, Oct. 16, 1970. This application Dec. 19, 1972, Ser. No. 316,572

Int. Cl. C08d *5/00*
U.S. Cl. 260—80.78 **12 Claims**

1. Batch process for removing the solvent from gummy solutions of polymers selected from group consisting of polybutadiene, polyisoprene and olefin terpolymers, said process being carried out in one stage at atmospheric pressure comprising:

(a) feeding a hydrocarbon solution of the polymer which contains hydrocarbon solvent having a boiling temperature below water, the polymer and un-reacted monomer into a solvent-removal vessel containing water and forming a suspension of said hydrocarbon solution in said water;

(b) while feeding said hydrocarbon solution, treating said suspended solution by feeding live steam into said suspension to keep said suspension agitated and vigorous stirring said suspension and regulating said live steam feed so as to maintain the temperature



at a temperature between 70° C. and 75° C. and the pressure at atmospheric pressures;

(c) stopping the feed of the hydrocarbon solution of the polymer into said vessel when a value of the water/polymer ratio in said vessel from about 20/1 to about 6/1 has been reached;

(d) after the feed of said hydrocarbon solution into said vessel is stopped, feeding more live steam into said vessel so that the temperature in said vessel reaches a value very near the boiling temperature of the water in said vessel in the process conditions while the pressure in said vessel is maintained at atmospheric pressure whereby the solvent still present in the polymer is less than 0.5% by weight based on the polymer;

(e) subjecting the suspension at such temperature near the boiling temperature of the water to a filtration and separating polymer crumbs and hot water and recycling said hot water to the solvent-removal vessel until a polymer-water ratio not higher than 1/100 is reached in said solvent-removal vessel.

3,842,053

PERFLUOROALKYL IODIDE MODIFIED POLYBUTADIENE RESINS

José L. Villa, Hightstown, and Hyman Iserson, Trenton, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Continuation of abandoned application Ser. No. 259,650, July 5, 1973. This application Dec. 28, 1973, Ser. No. 429,478

Int. Cl. C08d *5/04*
U.S. Cl. 260—83.3 **19 Claims**

1. A perfluoroalkyl iodide modified functionally-terminated butadiene polymer prepared from the reaction of perfluoroalkyl iodide and a functionally-terminated polymer containing pendent vinyl groups wherein at least some of said pendent groups are reacted with said perfluoroalkyl iodide in a solvent under refluxing conditions at a temperature of from 50 to about 130° C. and in the presence of a catalyst.

3,842,054

VINYL-TYPE ADDITION POLYMERS CONTAINING A PLURALITY OF TERTIARY NITROGENS QUATERNIZED WITH AN EPIHALOHYDRIN

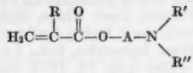
Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 131,399, Apr. 5, 1971. This application Feb. 26, 1973, Ser. No. 335,626

Int. Cl. C08f *7/12, 15/02*

U.S. Cl. 260—86.1 N 14 Claims

1. A method which comprises reacting in an aqueous medium maintained at a pH of from about 7 to about 9.5 and at a temperature of from about 30° C. to about 80° C. (1) an epihalohydrin and (2) an addition-type polymer of an ester monomer of the formula



wherein R is hydrogen or methyl; R′ is methyl or ethyl; R″ is methyl or ethyl; and A is a C_2–C_6 alkylene having at least 2 carbon atoms between the adjoined oxygen and nitrogen, at least about 20% of the polymer weight being attributable to the ester monomer.

3,842,055

PROCESS FOR DISPERSION POLYMERIZATION OF VINYL CHLORIDE WITH LOW POLYMER DEPOSITION

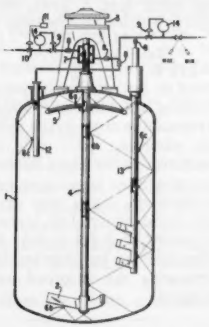
Richard Gabriel, Thomas Balwe, Johann Bauer, Kurt Fendel, and Rupert Kaczerofsky, Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Filed June 13, 1973, Ser. No. 369,497

Claims priority, application Germany, Aug. 14, 1972, P 22 39 942.4

Int. Cl. C08f *1/11, 1/98*

U.S. Cl. 260—87.1 7 Claims



1. In the free-radical polymerization process for the production of polymerizates in an aqueous dispersion containing at least 60% of polyvinyl chloride, with low polymer deposits, which comprises the steps of mixing (1) monomers selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 40% by weight of olefinically mono-unsaturated compounds copolymerizable with vinyl chloride, (2) a free-radical-forming polymerization catalyst, (3) dispersion stabilizers selected from the group consisting of protective colloids, emulsifiers and mixtures thereof, and (4) water, heating said mixture under agitation to a polymerization temperature of between 0° C. and 80° C. and recovering said polymerizate, the improvement which consists in conducting said polymerization in a confined space and spraying a fine spray of water in a total amount of from 20% to 100% by volume of the volume of said monomers, onto the exposed surfaces of said confined space during the period of said polymerization and during any distillation of unreacted monomers from the polymerizate dispersion, whereby a polymerizate is recovered with low polymer deposits.

3,842,056

METHOD FOR PRODUCING POLYVINYL CHLORIDE

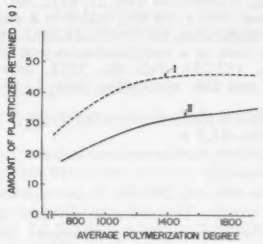
Masataka Torigoe, Masami Wada, and Kazuaki Nakano, Minamata, and Shiro Aruga, Tokyo, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed July 27, 1971, Ser. No. 166,415

Claims priority, application Japan, July 31, 1970, 45/67,095

Int. Cl. C08f *1/09*

U.S. Cl. 260—92.8 W 2 Claims



1. In the well known method for producing polyvinylchloride by polymerizing vinyl chloride monomer in an aqueous dispersion medium utilizing a suspension stabilizer, an initiator, and conventional temperatures, pressures, and reaction times, the improvement which comprises utilizing as the suspension stabilizer, 0.01–2.0% by weight of a polyethylene oxide and 0.01–2.0% by weight of a nonionic surfactant based upon the weight of the monomer, the weight average molecular weight of said polyethylene oxide being within the range of

$$4\times10^4-1.2\times10^6.$$

3,842,057

VINYL ESTER TERMINATED MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION AND PROCESS FOR PREPARING SAME

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill., assignors to CPC International Inc.

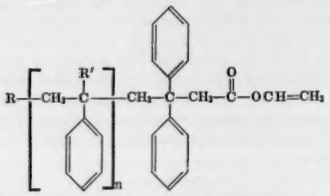
No Drawing. Application Aug. 21, 1972, Ser. No. 282,099, now Patent No. 3,786,116, which is a continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which in turn is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971. Divided and this application July 2, 1973, Ser. No. 376,082

Int. Cl. C08f *7/04, 27/00*

U.S. Cl. 260—93.5 A 10 Claims

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average molecular weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular mono-

mer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R′ is hydrogen or methyl, and *n* is a positive integer having a value of at least about 20.

3,842,058

VINYL ETHER TERMINATED POLYSTYRENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

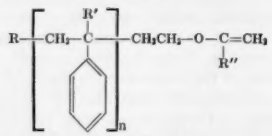
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill., assignors to CPC International Inc.

No Drawing. Application Aug. 21, 1972, Ser. No. 282,099, now Patent No. 3,786,116, which is a continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which in turn is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971, now abandoned. Divided and this application July 2, 1973, Ser. No. 376,083

Int. Cl. C07c *41/00;* **C08f** *7/04, 27/00*

U.S. Cl. 260—93.5 A **10 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average molecular weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl, R′ and R″ are each either hydrogen or methyl, and *n* is a positive integer having a value of at least about 20.

3,842,059

ACRYLATE AND METHACRYLATE TERMINATED POLYSTYRENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

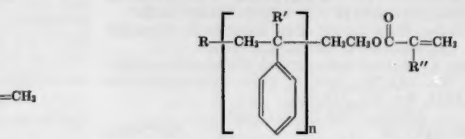
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill.

No Drawing. Division of application Ser. No. 282,099, Aug. 21, 1972, and a continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971, now abandoned. This application July 2, 1973, Ser. No. 376,106

Int. Cl. C08f *7/04, 27/00*

U.S. Cl. 260—93.5 A **10 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average molecular weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R′ and R″ are each either hydrogen or methyl, and *n* is a positive integer having a value of at least about 20.

3,842,060

ETHYLENE POLYMERIZATION PROCESS

George K. McDonald, Park Ridge, Robert M. Douglas, Harrington Park, and Irving Leibson, Wyckoff, N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed Aug. 14, 1973, Ser. No. 388,306

Int. Cl. C08f *1/60, 1/82, 3/04*

U.S. Cl. 260—94.9 R **8 Claims**

1. In a process for the continuous polymerization of monomer comprising ethylene in the presence of a free radical initiator employing a reaction system comprising an indirectly cooled tubular reactor wherein monomer is introduced at least to the inlet of the reactor and fresh monomer make-up gas is provided to the reaction system, the polymer product is separated from unreacted monomer and unreacted monomer is recycled to the reactor, the improvement which comprises continuously adding hydrogen to the reactor in amounts corresponding to between 10 and 150 p.p.m. by volume of the fresh monomer make-up gas to the reaction system.

3,842,061

METHOD FOR ISOLATION OF ANTITHROMBIN FROM ANIMAL TISSUE MATERIALS BY ADSORPTION ON SULFATED CARBOHYDRATE GEL

Lars-Olof Andersson, Knivsta, and Maggie Miller Andersson, Jakobsberg, Sweden, assignors to AB Kabi, Stockholm, Sweden

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,732

Claims priority, application Sweden, Sept. 8, 1971, 11,350/71

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 B **10 Claims**

1. The method of isolating antithrombin from an antithrombin-containing blood material, which comprises contacting a water-insoluble cross-linked sulfated polysaccharide gel matrix adsorbing agent with the anti-thrombin-containing blood material in liquid form, with the adsorbing agent being present in an amount sufficient to adsorb from at least about the major part of the antithrombin content of said blood material to about substantially its enire content thereof, and for a time sufficient for that range of antithrombin to be adsorbed on said adsorbing agent; and separating the adsorbed antithrombin from said adsorbing agent.

3,842,062

WATER-SOLUBLE COMPLEXES OF PROTEIN AND ANIONIC POLYELECTROLYTES SUCH AS SODIUM CARBOXYMETHYL CELLULOSE

Ernest Francis Eastman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 27, 1972, Ser. No. 292,611

Int. Cl. A23c *5/00;* **A23j** *1/20*

U.S. Cl. 260—112 R **4 Claims**

1. A method of preparing a water-soluble, essentially chemically neutral complex which comprises neutralizing a water-insoluble complex, formed by reacting (1) protein which is at least dispersible in water with (2) sodium carboxymethylcellulose, the weight ratio of protein to

sodium carboxymethylcellulose being 2:1 to 8:1, in an acidic aqueous medium at a pH below the isoelectric point of the protein, by reacting said water-insoluble complex with a water-soluble hydroxide in a solvent/water medium containing 55 to 99% by weight of water-miscible organic solvent and 1 to 45% by weight of water, and recovering the resulting water-soluble complex.

3,842,063

POLYPEPTIDES FROM BOVINE, OVINE, HUMAN AND PORCINE PANCREAS

Ronald E. Chance, Westfield, and William E. Jones, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 149,852, June 3, 1971. This application Apr. 25, 1973, Ser. No. 354,281

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **5 Claims**

1. A polypeptide of the formula:

Ala-X-Leu-Glu-Pro-Y-Tyr-Pro-Gly-Y'-Y''-Ala-Thr-Pro-Z-Gln-Met-
1 6 12 13

Ala-Gln-Tyr-Ala-Ala-Z'-Leu-Arg-Arg-Tyr-Ile-Asn-Met-Leu-Thr-Arg-
18 24 25 30

Pro-Arg-Tyr-NH_2
63

which mets at least one of the definitions that

X=Pro, Y=Gln, Y'=Asp, Y''=Asp, Z=Glu, Z'=Glu,
or
X=Pro, Y=Val, Y'=Asp, Y''=Asp, Z=Glu, Z'=Glu,
or
X=Ser, Y=Gln, Y'=Asp, Y''=Asp, Z=Glu, Z'=Glu,
or
X=Pro, Y=Val, Y'=Asx, Y''=Asx, Z=Glx, Z'=Aps,

wherein

Asx represents Asp or Asn; and
Glx represents Glu or Gln,

with the proviso that one and only one Asx and Glx can be Asn or Gln at any one time.

3,842,064

PSYCHOPHARMACOLOGICALLY ACTIVE TETRA-, PENTA-, HEXA-, AND HEPTA-PEPTIDES

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Mar. 19, 1973, Ser. No. 342,338

Claims priority, application Netherlands, Mar. 31, 1972, 7204422

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **5 Claims**

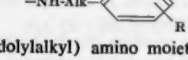
1. A peptide of the formula:

A-L-Glu(X)-L-His-L-Phe-Q-Y

in which A is selected from the group consisting of H-L-Met, H-D-Met, H-L-Met (→O), H-D-Met (→O), H-L-Met (→O_2), H-D-Met (→O_2), desamino-Met, desamino-Met (→O), desamino-Met (→O_2), and the moiety: H_2N-B-CO-, in which B is alkylene having 1–6 carbon atoms,

X is selected from the group consisting of OH and NH_2,

Q is selected from the group consisting of D-Lys and D-Arg, and Y is selected from the group consisting of OH, L-Trp-OH, L-Phe-OH, L-Trp-Gly-OH, L-Phe-Gly-OH, (N-phenyl-alkyl)-amino of the formula



and a (N-β-indolylalkyl) amino moiety of the formula

in which Alk is alkylene with 1–6 carbon atoms, and R is selected from the group consisting of hydrogen and hydroxy, and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6 C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or araliphatic alcohols with 1–8 carbon atoms, and metal complexes thereof.

3,842,065

HOMO-(TYR^5)-LRF AND THR^4-LRF AND INTERMEDIATES

Richard W. Rees, Bryn Mawr, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 22, 1973, Ser. No. 334,794

Int. Cl. A61k *27/00;* **C07c** *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **6 Claims**

1. A compound selected from the group consisting of L - p - Glu - L - His - L - Trp - L - (X) - L - Tyr - Gly-L-Leu-L-Arg-Pro-Gly-NH_2

(I)

and

R^6 - L - p - Glu - L - His(N^{im} - R) - L - Trp - L - (Y) - L-Tyr(R^1)-Gly-L-Leu-Arg(N^G-R^2)-L-Pro-Gly-R^3

(II)

and its non-toxic salts; wherein

X is selected from the class consisting of -Thr- and Ser-L-Tyr;

Y is selected from the class consisting of -Thr(R^4)- and -Ser(R^5)-L-Tyr(R^1)-;

R is a protecting group for the nitrogen atoms of the imidazole ring selected from the class consisting of tosyl, benzyl, trityl, 2,2,2-trifluoro-1-benzyloxycarbonylaminoethyl and 2,2,2-trifluoro-1-*tert*-butyloxycarbonylaminoethyl or R is hydrogen;

R^1 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the class consisting of acetyl, tosyl, benzoyl, *tert*-butyl, trityl, benzyl and benzyloxycarbonyl or

R^1 is hydrogen;

R^2 is a protecting group for the N^δ, N^ω, and $N^{\omega'}$ nitrogen atoms of arginine selected from the class consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and trityl; or R^2 is hydrogen;

R^3 is selected from the class consisting of NH_2 and —O—(lower) alkyl;

R^4 and R^5 are protecting groups for the alcoholic hydroxy group of threonine and serine and are selected from the class consisting of of acetyl, tosyl, benzoyl, *tert*-butyl, trityl, benzyl and benzyl oxycarbonyl or R^4 and/or R^5 is hydrogen; with the proviso that at least one of R, R^1, R^2, R^4 and R^5 is always a protecting group; and

R^6 is selected from the class consisting of hydrogen or an α-amino protecting group.

3,842,066

(AlA^3, AlA^{14})-SRIF AND INTERMEDIATES

Wayne A. McKinley, Wallingford, and Dimitrios Sarantakis, Audubon, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 25, 1973, Ser. No. 373,213

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **4 Claims**

1. A compound selected from those of the formula:

L - Ala - Gly - L - Ala - L - Lys - L - Asn - L - Phe - L - Phe-L-Trp-L-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Ala-OH (I)

and

R - L - Ala - Gly - L - Ala - L - Lys(R^1) - L - Asn - L - Phe - L - Phe - L - Trp - L - Lys(R^1) - L - Thr(R^2) - L -

Phe-L-Thr(R^2)-L-Ser(R^3)-L-Ala-X (II)

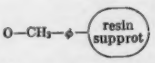
and the non-toxic salts thereof, wherein:

R is selected from the class consisting of H and an α-amino protecting group;

R^1 is selected from the class consisting of hydrogen or a side chain amino protecting group;

R^2 and R^3 are protecting groups for the alcoholic group selected from the class consisting of acetyl, tosyl, benzoyl, *tert*-butyl, trityl, benzyl, benzyloxycarbonyl or hydrogen; with the proviso that at least one of R, R^1, R^2 and R^3 is other than hydrogen;

X is selected from the class consisting of hydroxy, methoxy and



wherein the resin support is polystyrene.

3,842,067

SYNTHESIS OF (DES-Asn⁵)-SRIF AND INTERMEDIATES

Dimitrios Sarantakis, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 27, 1973, Ser. No. 383,420
Int. Cl. A61k *27/00;* **C07c** *103/52*
U.S. Cl. 260—112.5 **5 Claims**

1. A compound selected from those of the formula:

H-Ala-Gly-Cys-Lys-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH,

H-Ala-Gly-Cys-Lys-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH

and the non-toxic acid addition salts thereof, said amino acid residues having an asymmetric α-carbon atom being of the L-form.

3,842,068

8-EPI-ERYTHROMYCINS

John Soloman Tadanier, Chicago, and Jerry Roy Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed June 15, 1972, Ser. No. 263,088
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E **4 Claims**

1. An erythromycin derivative selected from the group consisting of 8-epi-10,11-anhydroethythromycin B, 8-epi-11,12-epoxyerythromycin A 6,9-hemiacetal, 8-epi-erythromycin B and 8-epi-10,11-anhydroerythromycin A.

3,842,069

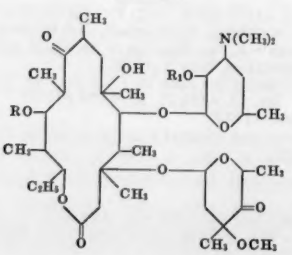
4″-DEOXY-4″-OXOERYTHROMYCIN B DERIVATIVES

Peter Hadley Jones, Lake Forest, Jerry Roy Martin, Waukegan, James Bruce McAlpine, Libertyville, Jeanne Marie Pauvlik, Waukegan, and John Soloman Tadanier, Chicago, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed June 21, 1973, Ser. No. 372,387
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **5 Claims**

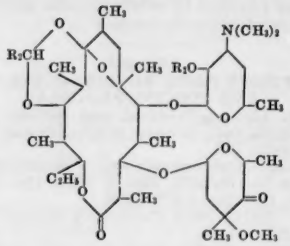
1. A 4″-deoxy-4″-oxoerythromycin compound selected from the group consisting of

Formula I



where R is —CHR_2SR_3 where R′ is hydrogen or lower-alkyl, R_3 is loweralkyl and R_1 is hydrogen or lower-alkanoyl and;

Formula II



where R_1 and R_2 are as before defined.

3,842,070

FILTERING MATERIAL

Alfred Joseph Harendza-Harinxma, Lawrenceville, N.J., assignor to Samuel A. La Paglia, Dean W. Merry, and Peter J. Catanese, fractional part interest to each

Continuation-in-part of application Ser. No. 210,043, Dec. 20, 1971, which is a continuation of application Ser. No. 69,760, Sept. 4, 1970, both now abandoned. This application June 8, 1973, Ser. No. 368,442

Int. Cl. A24b *15/02;* **C08b** *15/00*
U.S. Cl. 260—212 **22 Claims**

1. A fluid filter which comprises a complex metallic product resulting from reacting cellulose with an inorganic nitrate of the formula $Me(NO_3)n$ where Me represents a metal atom selected from the group consisting of manganese, nickel, aluminum, calcium, iron, sodium, zinc, and copper and *n* is a number corresponding to the valence number of the metal atom.

3,842,071

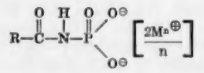
METHOD FOR THE PREPARATION OF STARCH PHOSPHATE ESTERS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed July 11, 1973, Ser. No. 378,159
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.5 **13 Claims**

1. A method for the preparation of starch phosphate esters comprising the steps of:

(a) reacting a starch base with a salt of an N-acylphosphoramidic acid corresponding to the general structural formula:



wherein R represents a radical selected from the group consisting of a halogen substituted methyl group, a halogen substituted phenyl group in which said halogen is any one of the following: fluorine or chlorine or bromine; a phenyl group; an alkyl substituted phenyl group, an alkoxy substituted phenyl group; said alkyl and alkoxy groups having from 1–6 carbon atoms; and M is a cation, and *n* represents the valence number of M;

(b) isolating the resulting starch product

wherein said reaction is conducted in an aqueous medium at a pH level of from 2.5–13, and

wherein said reaction is conducted at a temperature of from about 68–203° F. for a period of from 1 to 24 hours.

3,842,072

CERTAIN 2α-(2-HYDROXYMETHYL - 2 - PROPYL-MERCAPTO) - 3 - AMINO-AZETIDIN - 4 - ONE COMPOUNDS

Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

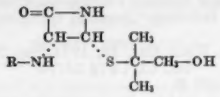
No Drawing. Continuation-in-part of abandoned application Ser. No. 843,236, July 18, 1969. This application Mar. 14, 1973, Ser. No. 341,203

Claims priority, application Switzerland, July 23, 1968, 10,998/68; Dec. 11, 1968, 18,510/68

Int. Cl. C07d *25/02*

U.S. Cl. 260—239 A 7 Claims

1. A compound of the formula



(I)

in which R is a member selected from the group consisting of a hydrogen atom, phenylacetyl, phenyloxyacetyl and lower alkoxycarbonyl, and O-esters of such a compound, in which the esterifying group is a member selected from the group consisting of lower alkanoyl, lower alkoxycarbonyl and 2-halogeno-loweralkoxy-carbonyl.

3,842,073

RACEMIZATION PROCESS FOR ALPHA-AMINO-CAPROLACTAM AND LYSINE AMIDE

Robert Fuhrmann, Morris Plains, Fred W. Koff, Clifton, and Stylianos Sifniades, Parsippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 165,379, July 22, 1971. This application Apr. 5, 1973, Ser. No. 348,366

Int. Cl. C07c *103/118*; C07d *53/06*

U.S. Cl. 260—239.3 R 7 Claims

1. In a method for the racemization of optically active material of the group consisting of α-aminocaprolactam and lysine amide and mixtures thereof by heating in the presence of a strong base, the improvement which comprises employing anhydrous ammonia as solvent and heating said material in solution therein at concentration of at least 10 percent by weight.

3,842,074

18-METHYLENE-STEROIDS OF THE PREGNANE SERIES

Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application May 13, 1971, Ser. No. 143,235, which is a continuation-in-part of application Ser. No. 784,492, Dec. 17, 1968, now Patent No. 3,584,016. Divided and this application Dec. 27, 1972, Ser. No. 318,813

Claims priority, application Switzerland, Dec. 22, 1967, 18,119/67; Nov. 25, 1968, 17,513/68

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 C 12 Claims

1. Process for the manufacture of 18-methylene steroids of the pregnane and androstane series, the corresponding 19-nor-derivatives thereof, wherein an N-oxide of a tertiary 18-aminomethyl-steroid is heated at the decomposing temperature.

3,842,075

ETHERS OF THE PREGNANE SERIES

Rinaldo Gardi, Carate Brianza, Milan, and Romano Vitali, Monza, Milan, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

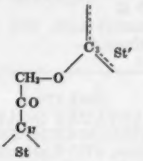
No Drawing. Filed Aug. 3, 1973, Ser. No. 385,385

Claims priority, application Italy, Aug. 7, 1972, 27,956/72

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D 18 Claims

1. Disteroidyl ethers having the structure:



wherein the broken line indicates the presence of a double bond between the carbon atoms in position 2′:3′ or 3′:4′; St is a steroid moiety belonging to the pregnane series and St′ is a steroid moiety belonging to the androstane or pregnane series or a corresponding 18-homo and 19-nor-derivative thereof.

3,842,076

NOVEL TRIAZASPIRO[4,5]DECAN-4-ONE DERIVATIVES

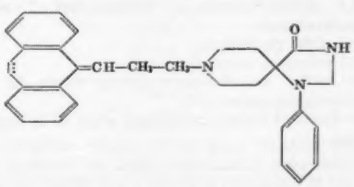
Willem Soudijn, Turnhout, Ineke van Wijngaarden, Beerse, and Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,847

Int. Cl. C07d *29/26*

U.S. Cl. 260—240 TC 3 Claims

1. A triazaspiro[4,5]decan-4-one derivative having the formula:



wherein the dotted line represents an optional double bond.

3,842,077

CEPHALOSPORANIC ACID DERIVATIVES

Peter Wolfgang Henniger, Leiden, Netherlands, assignor to American Home Products Corporation, Radnor, Pa.

No Drawing. Original application Dec. 17, 1970, Ser. No. 99,276, now Patent No. 3,813,385. Divided and this application Jan. 18, 1973, Ser. No. 324,627

Claims priority, application Great Britain, Dec. 18, 1969, 61,841/69

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C 2 Claims

1. A compound selected from the group consisting of 7-[(1 - phenylethylidene)iminooxycarbonamido]-cephalosporanic acid and its non-toxic alkali metal, and alkaline earth metal salts.

3,842,078
DIPHENYL-IMIDAZOLYL-ACETIC ACID MORPHOLIDE

Karl Heinz Büchel, Werner Meiser, Manfred Plempel, and Carl Metzger, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application May 18, 1970, Ser. No. 38,531, now Patent No. 3,732,242, dated May 8, 1973. Divided and this application Aug. 24, 1972, Ser. No. 283,576

Claims priority, application Germany, May 21, 1969, P 19 25 894.0

Int. Cl. C07d *87/38*

U.S. Cl. 260—247.5 R **2 Claims**

1. Diphenyl-imidazolyl-acetic acid morpholide or the hydrochloride salt thereof.

3,842,079
NITROSO ARYLOXY QUATERNARY AMMONIUM COMPOUNDS

Joseph B. Michaelson, 6732 Coldwater Canyon Blvd., North Hollywood, Calif. 91606

No Drawing. Continuation-in-part of application Ser. No. 119,350, Feb. 26, 1971, which is a continuation-in-part of application Ser. No. 659,321, Aug. 9, 1967, both now abandoned. This application June 29, 1972, Ser. No. 267,671

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 C **11 Claims**

1. A compound of the formula

$$[Q]^+ \ [O—Ar—NO—]^-$$

in which the —O—Ar—NO— moiety is selected from the group consisting of p-nitroso phenate in which Ar is p-phenylene, and p-nitroso naphthenate in which Ar is naphthalene; and the Q moiety is selected from the group consisting of:

dodecyl dimethyl benzyl ammonium;
dodecyl benzyl isoquinolinium;
myristyl methyl pyrrolidinium;
coco methyl pyrrolidinium;
lauryl ethyl piperidinium;
1-(3,4 - dichlorobenzyl) - 1 - hydroxyethyl - 2 - stearyl imidazolinium;
lauryl alpha picolinium;
lauryl trimethyl ammonium; and
coco methyl morpholinium groups where Ar is a p-phenylene group; and
coco dimethyl benzyl ammonium when Ar is naphthalene.

3,842,080
7-PHENYLPYRIMIDO[1,2-a][1,4]BENZODIAZEPIN-1(5H)-ONES

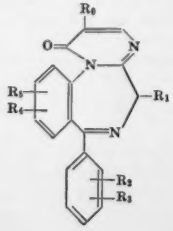
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Jan. 15, 1973, Ser. No. 323,766

Int. Cl. C07d *53/06*

U.S. Cl. 260—256.4 F **13 Claims**

1. A 7-phenylpyrimido[1,2-a][1,4]benzodiazepin-1(5H)-one of the formula:



wherein R_0 is selected from the group consisting of hydrogen, methyl, hydroxymethyl, and —$COOR_6$ in which R_6 is hydrogen or alkyl of 1 to 3 carbon atoms, inclusive; wherein R_1 is selected from the group consisting of hydrogen, hydroxy, acetoxy, propionoxy, or succinyloxy alkyl esters in which alkyl is defined as above; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, and alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, and alkanoylamino in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and dialkylamino in which alkyl is defined as above, the pharmacologically acceptable acid addition salts thereof. The N-oxides thereof.

3,842,081
PREPARATION OF AMINOCARBOXYLIC ACIDS FROM AMINOALCOHOLS

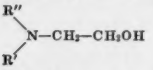
Heinz Schulze and Edward Thomas Marquis, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,316

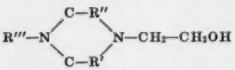
Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **11 Claims**

1. An aquous process for preparing aminocarboxylic acid salts comprising the steps of heating an aminoalcohol in the presence of at least a stoichiometric quantity, based upon the aminoalcohol employed, of sodium hydroxide, cadmium salts, and sufficient water to maintain the components in the reaction medium in solution, said aminoalcohol being represented by the following formula:



wherein R′ represents hydrogen or a group selected from —CH_2CH_2OH, a C_1 to C_{15} alkyl, or an aminoalkyl group having two to three carbon atoms; and R″ represents hydrogen or a group selected from phenyl, a C_1 to C_{15} alkyl substituted phenyl, or a C_1 to C_{15} alkyl; and wherein each R′ and R″ can also represent methylene groups or lower C_1 to C_3 alkyl substituted methylene groups, such that when taken with N—CH_2CH_2OH they comprise a portion of an N-substituted piperazine compound which compound can be further represented by the following formula:



wherein R‴ represents hydrogen, or a group selected from a C_1 to C_4 alkyl or —CH_2CH_2OH; and wherein said heating is conducted at a temperature in the range of about 250° C. to 300° C. for a time in the range of about 5 to 45 minutes under a pressure sufficient to maintain the water in liquid phase.

3,842,082
4-PIPERAZINYL-10H-THIENO[3,2-c][1]BENZAZEPINES

Fritz Hunziker, Bern, Switzerland, assignor to Wander Ltd. (also known as Wander AG), Bern, Switzerland

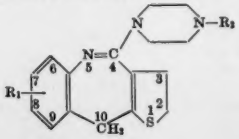
No Drawing. Filed Nov. 20, 1972, Ser. No. 307,924

Claims priority, application Switzerland, Nov. 26, 1971, 17,225/71

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **14 Claims**

1. A compound of the formula,



wherein

R_1 is hydrogen, fluorine, chlorine or bromine, or alkyl, alkoxy or alkylthio of 1 to 4 carbon atoms, and

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms mono-substituted with acetyl, or alkoxyalkyl of 2 to 6 carbon atoms in the aggregate thereof,

or a pharmaceutically acceptable acid addition salt thereof.

3,842,083

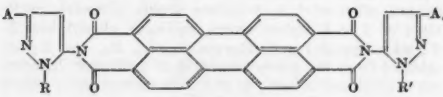
DYES OF THE PERYLENETETRACARBOXYLIC ACID DIIMIDE SERIES

Fritz Graser, Ludwigshafen, and Gerhard Kilpper, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,567
Claims priority, application Germany, Sept. 15, 1971, P 21 46 027.5

Int. Cl. C07d *39/00*
U.S. Cl. 260—281 **6 Claims**

1. A perylene-3,4,9,10-tetracarboxylic acid diimide dye of the formula



in which: A and A′ are hydrogen or methyl; and R and R′ are primary or secondary alkyl of one to twelve carbon atoms; phenyl which is unsubstituted or which bears a substituent selected from the group consisting of chlorine, bromine, methyl, ethyl, methoxy and nitro; phenylalkyl of seven to ten carbon atoms which is unsubstituted or which bears up to two substituents in the phenyl moiety selected from the group consisting of chlorine, bromine, methyl, ethyl, methoxy and one nitro; or a heterocyclic-substituted methyl selected from the group consisting of furfuryl, α-picolyl and γ-picolyl.

3,842,084

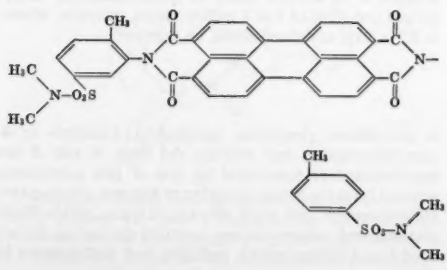
BIS-(DIMETHYL-META-SULFONAMIDOPHENYL)-IMIDES OF PERYLENES

Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,609
Claims priority, application Germany, Sept. 21, 1971, P 21 47 024.6

Int. Cl. C07d *39/00*
U.S. Cl. 260—281 **1 Claim**

1. The perylene-3, 4, 9, 10-tetracarboxylic diimide dye of the formula:



3,842,085

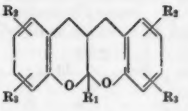
SUBSTITUTED PYRANO[2,3-b]PYRANS AND PROCESS FOR THEIR PRODUCTION

Max von Strandtmann, 47 Erie Ave., White Meadow Lake, Rockaway, N.J. 07866; Marvin P. Cohen, 420 Luhman Drive, New Milford, N.J. 07646; and John Shavel, Jr., Yardley Place, Mendham, N.J. 07945

No Drawing. Original application Feb. 4, 1972, Ser. No. 112,830, now Patent No. 3,752,830. Divided and this application Nov. 30, 1972, Ser. No. 311,025

Int. Cl. C07d *33/46*
U.S. Cl. 260—289 R **2 Claims**

1. A compound of the formula:



wherein R_1 is a disubstituted lower alkyl amino, and R_2 and R_3 taken together with the aromatic ring form quinoline ring systems.

3,842,086

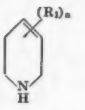
PROCESS FOR THE PREPARATION OF SUBSTITUTED OR UNSUBSTITUTED PYRIDINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

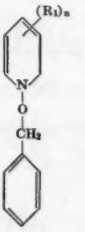
No Drawing. Continuation-in-part of abandoned application Ser. No. 115,825, Feb. 16, 1971. This application Sept. 18, 1972, Ser. No. 289,816

Int. Cl. C07d *29/38*
U.S. Cl. 260—290 H **6 Claims**

1. A process for the preparation of a product of the formula



which comprises treating in the lower alcohols, glycols, glyme, di-glyme or water solvent at a temperature of from −15° to 60° C., a salt of a compound of the formula:



with an alkali metal borohydride

where R_1 is lower alkyl having 1 to 6 carbon atoms, and n is 0, 1, 2 or 3.

3,842,087

1,8-NAPHTHYRIDINE COMPOUNDS

Haydn Windsor Richard Williams, Dollard des Ormeaux, and Clarence Stanley Rooney, Beaconsfield, Quebec, Canada, assignors to Merck Sharp & Dohme (I.A.) Corporation, Rahway, N.J.

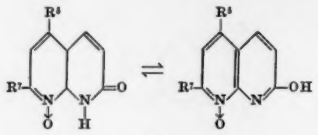
No Drawing. Filed May 22, 1973, Ser. No. 362,994

Claims priority, application Canada, June 16, 1972, 144,973

Int. Cl. C07d *31/42, 31/44*

U.S. Cl. 260—295 N 6 Claims

1. A 1,8-naphthyridin-2(1H)-one-8-oxide having structure I:



I

wherein R^5 represents hydrogen, lower alkyl, trifluoromethyl, pentafluoroethyl, phenyl, thienyl or naphthyl; R^7 represents lower alkyl, trifluoromethyl or pentafluoroethyl.

3,842,088

SUBSTITUTED NAPHTHO PYRAZOLES

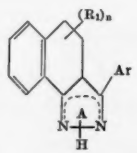
Dietmar A. Habeck, Heidelberg, Germany, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Jan. 31, 1973, Ser. No. 328,402

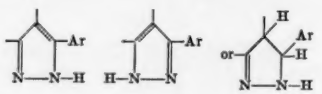
Int. Cl. C07d *31/42*

U.S. Cl. 260—296 T 3 Claims

1. A compound of the formula



where ring A represents the structures



(Ia) (Ib) (Ic)

n is 1 or 2;

R_1 represents straight chain lower alkyl having 1 to 4 carbon atoms; and

Ar is

or pharmaceutically acceptable acid addition salt thereof.

3,842,089

4-[α-(PHENYL)-o-TOLYL]-4H-1,2,4-TRIAZOLES

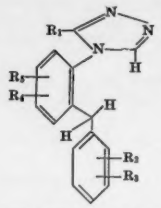
Jackson B. Hester, Jr., Galesburg, and Martin Gall, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 172,918, Aug. 18, 1971. This application Apr. 16, 1973, Ser. No. 351,141

Int. Cl. C07d *55/06, 57/00*

U.S. Cl. 260—296 R 6 Claims

1. A 4-[α-(phenyl)-o-tolyl] - 4H-1,2,4-triazole of the formula V



V

wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, cycloalkyl of 3 to 8 carbon atoms, inclusive, phenyl, and 2-, 3-, and 4-pyridyl and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, halogen, nitro, alkyl, and alkoxy, in which the carbon chain moiety is of 1 to 3 carbon atoms, inclusive.

3,842,090

CERTAIN 1-AMINOMETHYL-6-PHENYL 4H-s-TRIAZOLO[4,3-a][1,4]BENZODIAZEPINES

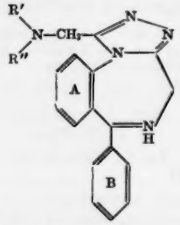
Martin Gall, Kalamazoo, and Jackson B. Hester, Jr., Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 14, 1973, Ser. No. 332,293

Int. Cl. C07d *57/02, 99/02*

U.S. Cl. 260—247.1 11 Claims

1. A process for the production of 1-[(substituted amino)methyl] - 6 - phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepines of formula VII:



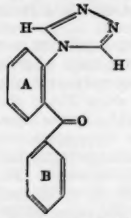
VII

wherein R' is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive, wherein R'' is alkyl as defined above, or, together

is pyrrolidino, piperidino, morpholino, 4-methyl- or 4-phenylpiperazino; and wherein the rings A and B are unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, nitro, cyano, trifluoromethyl, and alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and dialkylamino in

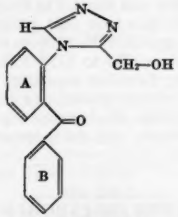
which the alkyl group is defined as above, which comprises the steps:

(1) heating to a temperature of 100–150° C. a mixture of a 2-(4H-1,2,4-triazol-4-yl)benzophenone of the formula I



I

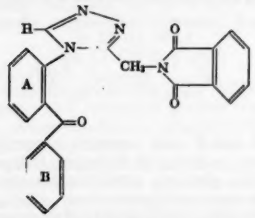
wherein A and B have the significance of above, with formaldehyde to obtain the corresponding 2-[3-(hydroxymethyl)-4H-1,2,4-triazol-4-yl]benzophenone of formula II



II

wherein A and B have the significance of above;

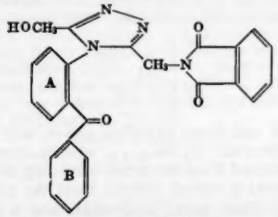
(2) treating II with phthalimide, triphenylphosphine and diethyl azodicarboxylate for 2–36 hours at between 0–40° C. to obtain the corresponding 2-[3-(phthalimidomethyl)-4H-1,2,4-triazol - 4 - yl]benzophenone of formula III



III

wherein A and B have the significance of above;

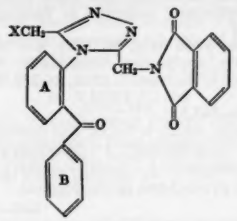
(3) treating III with formaldehyde at 100 to 150° C. to obtain the corresponding 2-[3-(phthalimidomethyl)-5-(hydroxymethyl) - 4H-1,2,4-triazol-4-yl]benzophenone of the formula IV:



IV

wherein A and B have the significance of above;

(4) treating IV with a halogenating agent selected from thionyl chloride and phosphorus tribromide to obtain the corresponding 2-[3-(phthaliminomethyl)-5-(halomethyl)-4H-1,2,4 - triazol - 4 - yl]benzophenone of formula V:



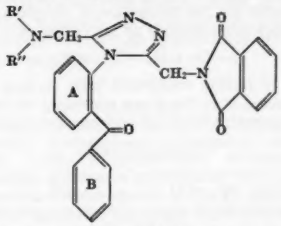
V

wherein A and B have the significance of above, and wherein X is chloro or bromo;

(5) treating V with an amine of the formula

wherein R′ is alkyl defined as above, or hydrogen, wherein R″ is alkyl defined as above or together

is pyrrolidino, piperidino, morpholino, 4-methyl- or 4-phenylpiperazino, in the presence of an alkali iodide, to give the corresponding 2-[5-[(substituted amino)methyl] - 3 - (phthalimidomethyl)-4H-1,2,4-triazol-4-yl]benzophenone VI:



VI

wherein R′, R″, A and B have the significance as defined above; and

(6) heating VI with hydrazine hydrate to give the compound of formula VII above.

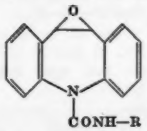
3,842,091

DIBENZOXIRENAZEPINE DERIVATIVES

Kenya Kawashima and Toshihiro Ishiguro, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,627
Claims priority, application Japan, Sept. 30, 1971, 46/76,971; July 24, 1972, 47/74,448; July 28, 1972, 47/76,324
Int. Cl. C07d *41/08*
U.S. Cl. 260—348 C **12 Claims**

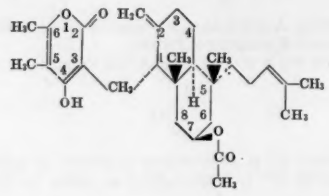
1. A compound represented by the formula:



wherein R stands for a hydrogen atom, a lower alkyl group, a lower alkyl amino lower alkyl group, a phenyl C_1–C_3 alkyl group, a phenyl, tolyl or xylyl group or an amino group or its pharmaceutically acceptable salt.

3,842,092
SESQUICILLIN
Berthold Thiele, Hirschthal, and Hans Tscherter, Neuallschwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
No Drawing. Filed Mar. 30, 1973, Ser. No. 346,586
Claims priority, application Switzerland, Apr. 5, 1972, 4,954/72; Nov. 8, 1972, 16,250/72
Int. Cl. C07d 7/06
U.S. Cl. 260—343.5 1 Claim

1. Sesquicillin, which is 3-[5β, 8aβ-dimethyl-6-acetoxy-2-methylene - 5 - (4-methyl - 3 - pentenyl)-1β,2,3,4,4aα,5,6α,7,8,8a - decahydro - 1 - naphthylmethyl]-5,6-dimethyl-4-hydroxy-2H-pyran-2-one of the formula,



3,842,093
CHROMAN-3-OLS
John Richard Collier, Birmingham, and Alan Sidney Porter, Halesowen, England, assignors to Albright & Wilson Limited, London, England
No Drawing. Filed June 16, 1972, Ser. No. 263,425
Int. Cl. C07d 7/24
U.S. Cl. 260—345.2 20 Claims

1. A process for the production of chroman-3-ol compounds comprising oxidizing an allyl ether of the formula

$$\phi\text{—O—}CH_2\text{—}CH\text{=}CH_2$$

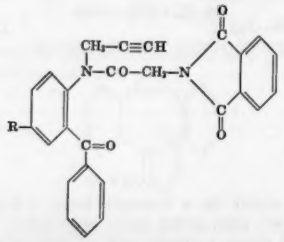
wherein ϕ is phenyl substituted with at least one substituent selected from the group consisting of methyl, and methoxy, groups, at least one position ortho to the

$$\text{—}OCH_2CH\text{=}CH_2$$

group being unsubstituted; by contacting said allyl ether with a thallium III salt in an aqueous solution containing an acid selected from the group consisting of sulphuric, nitric, fluoroboric, perchloric and trifluoroacetic acids.

3,842,094
2-(N-PROPARGYL)-PHTHALIMDOACETAMIDO-5-HALOBENZOPHENONES
Ctirad Podesva, Montreal, Quebec, Canada, and Kitty Vagi, Fort Lauderdale, Fla., assignors to Delmar Chemicals Limited, Ville La Salle, Quebec, Canada
No Drawing. Filed Aug. 31, 1972, Ser. No. 285,369
Int. Cl. C07d 27/52
U.S. Cl. 260—326 N 2 Claims

1. A 2-phthalimdoacetamido-benzophenone compound having the formula:



wherein R represents halogen.

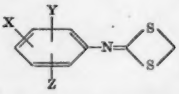
3,842,095
SULFONIC ACID PURIFICATION
Edward W. Heffern, Schaumburg, Dennis G. Petrille, Naperville, and Robert E. Karll, Batavia, Ill., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Dec. 20, 1972, Ser. No. 316,841
Int. Cl. C07d 89/06
U.S. Cl. 260—327 S 4 Claims

1. The process for separating a mixture of (a) oil-soluble alkenyl sulfonic acids wherein the alkenyl moiety is a propene or butene polymer having a number average molecular weight of about 250 to about 500 and (b) oil-soluble sultones of said polymer from a sulfonation product mixture obtained by continuously treating a viscous liquid propene or butene polymer having a number average molecular weight of about 250 to about 500 with gaseous sulfur trioxide in a falling-film reactor or in a static reactor having interfacial surface generating means, which process comprises:

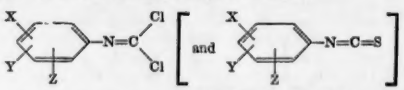
admixing said sulfonation product mixture with about 0.25 to about 1.25 volumes of a water-immiscible inert liquid hydrocarbon solvent per volume of said product mixture and about 3 to about 20 weight percent of water based on said product mixture and holding with agitation the aqueous mixture at a temperature of about 70° to 175° F. for about 0.25 to about 2 hours; thereafter separating the aqueous and hydrocarbon solvent phases, and recovering the hydrocarbon solvent phase containing said mixture of oil-soluble sulfonic acid and polymer sultones.

3,842,096
PROCESS FOR PREPARING 2-IMINO-1,3-DITHIETANES
William W. Brand and Milon Walker Bullock, Hopewell, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Feb. 28, 1973, Ser. No. 336,644
Int. Cl. C07d 69/00
U.S. Cl. 260—327 M 4 Claims

1. A process for the preparation of a compound having the formula:



wherein X, Y and Z each represent a member selected from the group consisting of hydrogen, halogen, $R(A)_n$, hydroxy, phenyl, phenoxy, monohalophenoxy, nitro, trihalomethyl, cyano, carb(lower)alkoxy C_1–C_4, $R_1S(O)_m$, di(lower)alkylamino, mono(lower)alkylamino, 1,3-dithietanylideneamino; R is alkyl C_2–C_8, alkenyl C_3–C_8; A is O or S; n is an integer selected from 0 and 1; R_1 is lower alkyl C_1–C_4; m is an integer selected from 1 and 2, and when two of X, Y and Z are taken together on adjacent carbons, they form a benzo group which comprises the steps of: reacting at a temperature ranging from 0° C. to 60° C. a compound having the formula:

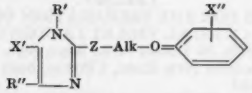


wherein X, Y and Z are as defined above, with a sulfide having the formula: $H_a'SM_{(2-a')}$, wherein a' represents an integer selected from the group consisting of 0, 1 and 2; M represents a radical selected from the group consisting of an alkali metal, ammonium and a primary-, secondary-, tertiary- and quaternary-alkyl (C_1–C_4) ammonium, in the presence of or subsequent addition to from 1.0 to 3.0 equivalents of methylene bromide, and a base selected from the group consisting of an alkali

metal hydroxide, an alkali metal carbonate, an alkali metal bicarbonate, ammonia and a C_1–C_4 alkylamine in a polar aprotic solvent or a mixture of water and said polar aprotic solvent, the solvent being selected from the group consisting of pyridine, dimethylsulfoxide, dimethylformamide, acetonitrile, a lower alkyl (C_1–C_4) aliphatic ketone, ethylene glycol dimethyl ether, sulfolane and an esterified lower alkanol and wherein the number of equivalents of said base relative to said sulfide equals at least the equivalents of hydrogen, *a'*, in the said sulfide reactant.

3,842,097
2-(PHENOXYALKYLTHIO)IMIDAZOLES AND CONGENERS
Robert C. Tweit, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed Jan. 22, 1973, Ser. No. 325,223
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **15 Claims**

1. A compound of the formula



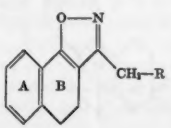
wherein R' represents hydrogen or lower alkyl; R'' represents hydrogen or methyl; X' represents hydrogen or nitro; X'' represents hydrogen, bromo, nitro, cyano, formyl or carboxyl; Z represents thio, sulfinyl, or sulfonyl; and Alk represents lower alkylene.

3,842,098
PRODUCTION OF 2-MERCAPTOBENZIMIDAZOLE BY REACTING o-PHENYLENE DIAMINE AND CARBON DISULFIDE
Bernd Scherhag, Eliahu Koppelmann, and Hermann Wolz, Leverkusen, and Marc Francque, Monheim, Rhineland, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 12, 1973, Ser. No. 323,118
Claims priority, application Germany, Jan. 18, 1972, P 22 02 204.4
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **5 Claims**

1. A process for producing high purity 2-mercaptobenzimidazole which comprises reacting *o*-phenylene diamine with carbon disulfide in benzothiazole or in alkylbenzothiazole having from 1 to 4 carbon atoms in the alkyl moiety, extracting resulting 2-mercaptobenzimidazole containing solution with dilute aqueous alkali metal hydroxide solution, precipitating extracted 2-mercaptobenzimidthiazole from resulting aqueous alkali metal hydroxide solution containing the same by acidification and recovering precipitated 2-mercaptobenzimidazole.

3,842,099
NAPHTHO(2,1-d)ISOXAZOLE DERIVATIVES
Yasushi Suzuki, Yokohama, Toshihisa Itaya and Nobuyoshi Minami, Kawasaki, Masaaki Tarutani, Tokyo, Tokutaro Miki, Hachioji, and Katsuhiko Miyasaka, Kawasaki, Japan, assignors to Teikoku Hormune Mfg. Co., Ltd., Tokyo, Japan
No Drawing. Original application Oct. 6, 1969, Ser. No. 864,163, now abandoned. Divided and this application Jan. 13, 1972, Ser. No. 217,632
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 D **10 Claims**

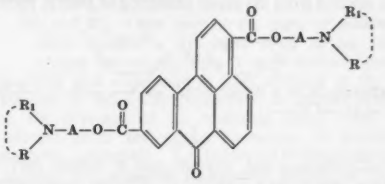
1. A compound of the formula



wherein ring A has 0–2 substituents selected from the group consisting of alkoxy of up to 4 carbon atoms, alkyl of up to 4 carbon atoms, and halogen, ring B may have a carbon-to-carbon double bond between the positions of C–4 and C–5, and R represents a hydroxyl group, a halogen atom or a cyano group.

3,842,100
BENZANTHRACENE DERIVATIVES
Arthur D. Sill, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Dec. 21, 1972, Ser. No. 317,145
Int. Cl. C07c *93/20*
U.S. Cl. 260—364 **3 Claims**

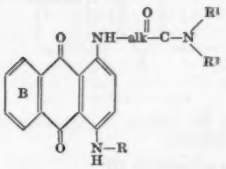
1. A bis-basic ester of 7H-benz[de]anthracen-7-one having the general formula:



wherein A is a straight or branched alkylene chain having from 2 to 6 carbon atoms; R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino or morpholino radicals; and the pharmaceutically acceptable acid addition salts thereof.

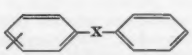
3,842,101
BLUE ANTHRAQUINOID ACID DYES
Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed May 16, 1973, Ser. No. 360,898
Claims priority, application Great Britain, May 19, 1972, 23,798/72
Int. Cl. C09b *1/34*
U.S. Cl. 260—372 **4 Claims**

1. A blue anthraquinoid acid dye obtained by sulfonating a compound of the formula



alk is a linear or branched alkylene of one to thre carbon atoms;

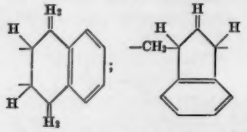
R^1 is selected from the group consisting of phenyl which may bear from one to four identical or different substituents selected from the group consisting of alkyl, alkoxy or akylthio of one to four carbon atoms and halogen or which may bear one nitro substituent; naphthyl;



wherein X is a direct linkage, —O—, —S—,

$-CH_2-$, $-CH_2-CH_2-$, $-CH(CH_3)-$ or $-C(CH_3)_2-$;

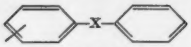
phenylalkyl of seven to ten carbon atoms;



and alkyl of one to five carbon atoms which bears a phenyloxy or phenylthio as a substituent wherein said phenyloxy or phenylthio may be substituted by alkyl or alkoxy of one to four carbon atoms or halogen;

R^2 is hydrogen or lower alkyl;

R is selected from the group consisting of phenyl, naphthyl and



wherein X is a direct bond, —O—, —S—, $-CH_2-$, $-CH_2-CH_2-$,

$-C(CH_3)_2-$ and wherein said R radical may bear from one to four identical or different substituents selected from the group consisting of alkyl, alkoxy, alkylthio of one to four carbon atoms or halogen and in which one hydrogen or two hydrogens in the ring B may be replaced by hydroxy or chlorine.

3,842,102
PROCESS FOR THE PRODUCTION OF ACID ANTHRAQUINONE DYES

Peter Hindermann, Bottmingen, and Hubert Meindl, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

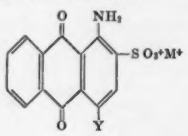
No Drawing. Continuation-in-part of application Ser. No. 715,990, Mar. 25, 1968, now Patent No. 3,778,453, dated Dec. 11, 1973. This application Jan. 4, 1972, Ser. No. 215,673

Claims priority, application Switzerland, May 5, 1967, 4,892/67

Int. Cl. C07c *143/56*; C09b *1/34*

U.S. Cl. 260—374 **5 Claims**

1. A process for the production of acid anthraquinone dyestuffs, comprising the steps of reacting an anthraquinone compound of formula II



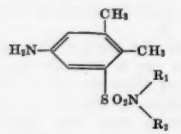
(II)

wherein

M^+ represents the sodium or potassium cation, and

Y represents halogen,

with an amine of formula III



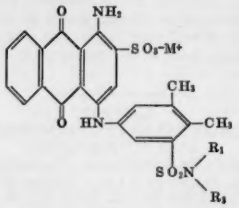
(III)

wherein

R_1 represents a substituent selected from methyl, ethyl, propyl, β-hydroxyethyl, γ-hydroxypropyl, γ-methoxypropyl, β-hydroxyethoxyethyl and β-methoxyethoxyethyl, and

R_2 represents hydrogen or a substituent selected from methyl, ethyl, propyl and β-hydroxyethyl,

at a temperature in the range of from 70 to 85° C., in an aqueous reaction medium having a pH of at least 5 and in the presence therein of an acid binding agent and copper powder or copper sulfate or a mixture thereof, and recovering from the reaction mixture the corresponding dyestuff of formula I



wherein M^+, R_1 and R_2 have the aforesaid meanings.

3,842,103
PROCESS FOR THE PREPARATION OF LEUCO CRYSTAL VIOLET LACTONE

Geoffrey Smith, 36 Dorset Ave., Moss Side, and Thomas Marley, Ashton New Road, Clayton, both of Manchester, England

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,365

Claims priority, application Great Britain, Nov. 18, 1970, 54,820/70

Int. Cl. C09b *11/10*

U.S. Cl. 260—391 **8 Claims**

1. A method for the preparation of 2-[4,4'-bis-(dimethylamino) - benzohydryl] - 5 - dimethylaminobenzoic acid, wherein an aqueous solution of tetramethyl-4,4'-diaminobenzohydrol having a temperature of 10° C. to 25° C. and a pH of 1.5 to 2.0 is added to an aqueous solution of m-dimethylaminobenzoic acid having a temperature of 60° C. to 100° C. and a pH of 1.5 to 2.0.

3,842,104
17-ALPHA-PROPADIENYL-SUBSTITUTED STEROIDS

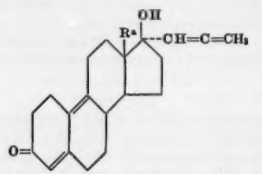
Imre Bacso, Morristown, and Robert V. Coombs, Chatham, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,929, Sept. 4, 1970. This application Apr. 17, 1972, Ser. No. 244,889

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.4 **12 Claims**

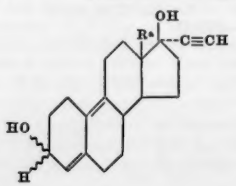
1. A process for the preparation of a 3-keto-compound of the formula



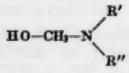
wherein R^a is alkyl having from 1 to 3 carbon atoms;

which comprises

(a) reacting a 17α-ethynyl-substituted compound of the formula



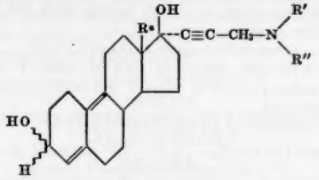
wherein R^a is as defined above
with a dialkylamino-methanol of the formula



wherein each of R′ and R″ is, independently, alkyl having from 1 to 3 carbon atoms; and R′ and R″ may be joined to form, in conjunction with the nitrogen atom, a ring having from 4 to 6 carbon atoms in the presence of cuprous ions and acetic acid at temperatures of from about 10° to 80° C.,

in an inert organic solvent;

to obtain a 17α-dialkylamino propynyl-substituted compound of the formula



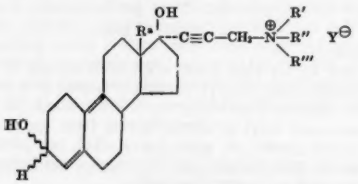
wherein R^a, R′ and R″ are as defined above;

(b) which dialkylaminopropynyl-substituted compound is then reacted with a compound of the formula

$$R'''—Y$$

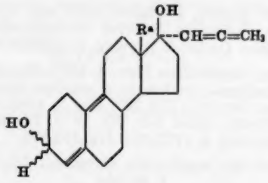
wherein R‴ is alkyl having from 1 to 3 carbon atoms; and Y is an anionic residue of a mineral acid other than a fluoride ion, or residue of a sulfonic acid,

to obtain a quaternary salt of the formula



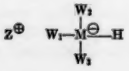
wherein R^a, R′, R″ and R‴ and Y are as defined above;

(c) which quaternary salt is reduced with a complex hydride to obtain a diol compound of the formula



wherein R^a is as defined above;

and the complex hydride is a hydride ion source selected from the group consisting of compounds of formula



in which

M represents an aluminum, gallium or boron atom,

Z represents an alkali metal or alkaline earth metal atom, and

W_1, W_2 and W_3 which may be the same or different, each represents a hydrogen atom, or an alkyl or alkoxy containing up to 6 carbon atoms, or an alkoxyalkoxy radical wherein the alkyl and alkylene portions each contain up to 6 carbon atoms

and compounds of formula

in which

M is as defined above, and

W_4 and W_5, which may be the same or different, each signifies a hydrogen atom or an alkyl radical containing from 1 to 6 carbon atoms,

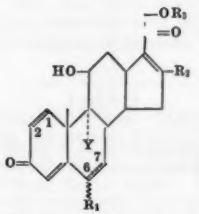
(d) which diol compound is then oxidized at the 3-position to the 3-keto compound, as defined above, in the presence of an oxidizing agent which is selected from the group consisting of p-benzoquinone, chloranil, 2,3-dichloro-5,6-dicyanobenzoquinone and activated manganese dioxide, at from 10° to 50° C., in an inert solvent.

3,842,105
PROCESS FOR THE PREPARATION OF 16,17-UNSATURATED STEROIDS

Helmut Hofmeister, Henry Laurent, Klaus Prezewowsky, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed Feb. 9, 1973, Ser. No. 331,060
Claims priority, application Germany, Feb. 11, 1972, P 22 07 420.0
Int. Cl. C07c *169/20, 169/32*
U.S. Cl. 260—397.45 **7 Claims**

1. A process for the production of $\Delta^{4,16}$-11β-hydroxy-3,20-diketo-21-acyloxy steroids of the formula



wherein

$C_{1\text{----}2}$ and $C_{6\text{----}7}$

each represent a saturated or unsaturated carbon-to-carbon bond, R_1 is H or methyl in the α- or β-position when

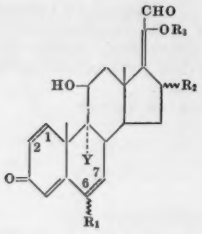
$C_{6\text{----}7}$

is a single bond, or fluorine, chlorine, bromine or methyl when

$C_{6\text{----}7}$

is a double bond, R_2 is H or lower alkyl, R_3 is lower alkanoyl is of 1–5 carbon atoms and Y is hydrogen or

fluorine, which comprises heating at a temperature from about 80° C. to the boiling point of the reaction solvent a non-esterified 11β,17,21 - trihydroxy-20-keto-pregnane of the formula



wherein

C_1==C_2, C_6==C_7,

R_1, R_3 and Y have the above-indicated meanings and R_2 stands for hydrogen or lower alkyl, in a polar organic solvent, in the presence of an alkali or alkaline earth salt of a lower alkanoic acid of 1–5 carbon atoms, of a carbonic acid, or of an aromatic carboxylic acid to form said 21-acyloxy steroid.

3,842,106

COMPOSITION CONTAINING HIGHER FATTY ACIDS

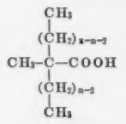
Anatoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 5, 1973, Ser. No. 367,177

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **5 Claims**

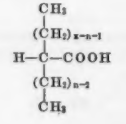
1. A composition containing a mixture of carboxylic acids falling within each of the following general structures:



wherein x is a number from 18 to 30 and n is the integer 2, 3, 4 up to $x/2$ for even integers between 18 and 30 and 2, 3, 4 up to

$$\frac{x+1}{2}$$

for odd integers between 18 and 30, and



wherein x is a number from 18 to 30 and n is the integer 2, 3, 4 up to $x/2$ for even integers between 18 and 30 and 2, 3, 4 up to

$$\frac{x+1}{2}$$

for odd integers between 18 and 30.

3,842,107

PHOSPHINE OR PHOSPHITE GOLD COMPLEXES OF THIOBENZOIC ACID AND SUBSTITUTED THIOPHENOLS

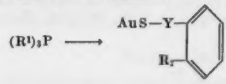
Blaine M. Sutton, Hatboro, and Joseph Weinstock, Phoenixville, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed July 23, 1973, Ser. No. 381,832

Int. Cl. C07f *1/12*

U.S. Cl. 260—430 **8 Claims**

1. A compound of the formula:



in which:

R^1 is lower alkyl, lower alkoxy, phenyl or phenoxy with each alkyl or alkoxy having from one to three carbon atoms;

Y is a carbon-sulfur single bond or C=O;

R^2 is hydrogen, amino or COOM when Y is C=O, or amino or COOM when Y is a carbon-sulfur single bond; and

M is hydrogen or an alkali metal cation.

3,842,108

LARGE RING GOLD-SULFUR-PHOSPHINE CHELATES

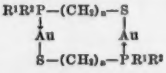
Blaine M. Sutton, Hatboro, and Joseph Weinstock, Phoenixville, Pa. assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 1, 1973, Ser. No. 384,665

Int. Cl. C07f *1/12*

U.S. Cl. 260—430 **3 Claims**

1. A compound of the formula:



in which:

R^1 and R^2 are each lower alkyl of from one to three carbon atoms, phenyl, phenyl substituted with a member selected from the group of alkyl, alkoxy or halogen, each alkyl or alkoxy having from one to three carbon atoms, or, when lower alkyl, are joined together with the phosphorus atom to which they are attached to form a ring; and

n is two to four.

3,842,109

PREPARATION OF BETA-HALOGENOALKYL ISOCYANATES

Klaus-Dieter Kampe, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

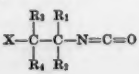
No Drawing. Application Nov. 4, 1970, Ser. No. 86,981, now abandoned, which is a continuation-in-part of application Ser. No. 727,347, May 7, 1968, now Patent No. 3,644,458, dated Feb. 22, 1972. Divided and this application Oct. 6, 1972, Ser. No. 298,805

Claims priority, application Germany, May 9, 1967, F 52,364

Int. Cl. C07c *119/04*

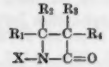
U.S. Cl. 260—453 P **6 Claims**

1. A process for the preparation of a β-haloalkylisocyanate of the formula



(I)

wherein X is chlorine or bromine and R_1, R_2, R_3 and R_4, taken alone, are hydrogen, alkyl of 1 to 13 carbon atoms, alkenyl of 2 to 13 carbon atoms, chloroalkyl of 1 to 13 carbon atoms, bromoalkyl of 1 to 13 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, or phenyl, and wherein R_1, R_2, R_3, and R_4, taken pairwise, are alkylene or alkenylene of 3 to 6 carbon atoms or part of a bicyclic or tricyclic carbocyclic saturated or mono-unsaturated ring system of up to 13 carbon atoms, which process comprises contacting, at a temperature of about −30° C. to about +250° C., a lactam of the formula



(II)

wherein X, R_1, R_2, R_3 and R_4 are as defined above, with from 0.002 to 1.5 mol percent, per mole of lactam, of a free-radical forming catalyst and with from 0.2 to 3 mols, per mol of lactam, of a co-catalyst selected from the group consisting of olefins and acetylenes free of isocyanate-reactive functional groups.

3,842,110

PROCESS FOR PRODUCING OCTAPHENYLTETRACYCLOSILOXANE

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

No Drawing. Filed Oct. 11, 1973, Ser. No. 405,310

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 E **11 Claims**

1. A process for producing octaphenyltetracyclicsiloxanes comprising (a) contacting $(C_6H_5)_2SiX_2$, where X is halogen and which compound has trace amounts of the other halogen silanes with an ingredient selected from the class consisting of an alcohol of the formula, ROH, and a mixture of water and an alcohol where up to 50 mole percent of the mixture can be water, where R is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals of up to 8 carbon atoms to form substantially a reaction product of the formula $(C_6H_5)_2Si(OR)_2$· (b) removing any acid that is formed; (c) adding water, a water-immiscible organic solvent and an alkaline rearrangement catalyst to the reaction product of (a) and (b); and (d) heating the resulting mixture from 40° C. to below 80° C. to form the desired product.

3,842,111

SULFUR CONTAINING ORGANOSILICON COMPOUNDS

Eugen Meyer-Simon and Werner Schwarze, Frankfurt, Friedrich Thurn, Grossauheim, and Rudolf Michel, Somborn, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

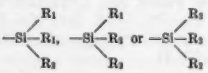
No Drawing. Filed Aug. 1, 1972, Ser. No. 277,043

Claims priority, application Germany, Aug. 17, 1971, P 21 41 159.6, P 21 41 160.9; Mar. 14, 1972, P 22 12 239.0

Int. Cl. C07f 7/10, 7/18

U.S. Cl. 260—448.2 E **33 Claims**

1. A process of preparing a compound having the formula Z—alk—S_n—alk—Z, in which Z is



(1) (2) (3)

wherein R_1 is alkyl of 1 to 4 carbon atoms or phenyl and R_2 is alkoxy of 1 to 8 carbon atoms, cycloalkoxy with 5 to 8 carbon atoms or alkylmercapto with 1 to 8 carbon atoms, alk is a divalent hydrocarbon of 1 to 18 carbon atoms and n is an integer of 2 to 6 comprising reacting a compound of the formula Z—alk—hal with a compound of the formula Me_2S_n where Me is ammonium, alkali metal or an alkaline earth metal and hal is a halogen of atomic weight 35 to 127.

3,842,112

HYDROXYALKENYLSILOXANE RIGID URETHANE FOAM STABILIZERS

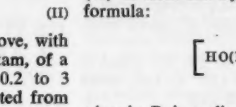
George M. Omietanski and Vincent T. Chuang, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,786

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 B **9 Claims**

1. A hydroxyalkyenylsiloxane consisting essentially of (A) at least one hydroxyalkenylsiloxane unit having the formula:



wherein R is a divalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds, R′ is an arylene group, a cycloalkylene group that has no hydrogen bonded to the carbon atom attached to the C_2H_2 group and that is free of aliphatic carbon to carbon multiple bonds or a divalent —CR_2''— group, R″ and R° are each monovalent hydrocarbon groups free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms, C_2H_2 is a —CH=CH— or a

group, each hydroxyalkenylsiloxane group has no more than 20 carbon atoms, a has a value of 0 or 1, b has a value of 1, 2 or 3, c has a value of 0, 1 or 2, and $(b+c)$ has a value of 1, 2 or 3; and (B) at least three hydrocarbylsiloxane units represented by the formula:

wherein R°° is a monovalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms and d has a value of 1, 2 or 3, the molecular weight of the siloxane portion of the hydroxyalkenylsiloxane being from about 250 to about 1300 inclusive, and, when dihydrocarbylsiloxane units, R_2°°SiO units, are present, the ratio of hydroxyalkenylsiloxane units to dihydrocarbylsiloxane units is at least 0.5 to 1.0.

3,842,113

CATALYST FOR REDUCING CARBON DIOXIDE

Masaru Ichikawa, Tokorozawa, Shuichi Naito, Toshihiko Kondo, and Kohei Kawase, Sagamihara, and Kenzi Tamaru, Kamakura, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

No Drawing. Original application Sept. 30, 1971, Ser. No. 185,370, now abandoned. Divided and this application Feb. 15, 1973, Ser. No. 332,575

Claims priority, application Japan, Nov. 25, 1970, 45/103,263

Int. Cl. C07c 1/12, 27/06

U.S. Cl. 260—449 R **7 Claims**

1. In a process for reducing carbon dioxide wherein carbon dioxide is reacted with hydrogen in the presence of a catalyst, the improvement which comprises conducting said reaction at a temperature of from 250° C. to 400° C. in the presence of an electron donor-acceptor complex catalyst consisting essentially of

(a) an alkali metal,

(b) a chloride of a transition metal of Group VIB or VIII of the Periodic Table, and

(c) graphite, and

wherein the weight ratio of said chloride to graphite is 0.001–10:1 and of said alkali metal to graphite and said chloride is 0.1–10:1.

3,842,114

ISOMERIZATION CATALYST ACTIVATION PROCESS

Swan T. Sie, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Mar. 5, 1973, Ser. No. 338,111

Claims priority, application Netherlands, Apr. 25, 1972, 7205564

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z 7 Claims

1. A process for activating a catalyst comprising one or more platinum-group metals supported on H-mordenite for isomerizing aliphatic saturated C_4–C_6 hydrocarbons at temperatures between 200° C. and 300° C. which comprises:

hydrating a catalyst containing up to 5% wt. water at a temperature of not more than 150° C. to a water content between 5 and about 21% wt.;

and subsequently dehydrating said catalyst at temperatures below 300° C. to a water content of 2–3% wt. by contacting said catalyst with a flowing gas stream while raising the temperature under such conditions that

$$\frac{A \times B}{C} < 90,$$

where A represents the catalyst water content in percent wt. before the temperature is raised, B represents the heating-up rate in ° C./hour and C represents the space velocity of the gas in liters of gas/liter of catalyst/hour, and at temperatures above 150° C. said space velocity is at least 5.

3,842,115

PROCESS FOR PURIFYING DIAMINOMALEONITRILE

Yoshito Hamamoto, Nakajyo-machi, and Tomio Okada, Yamato, Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., and Sagami Chemical Research Center, both of Tokyo, Japan

No Drawing. Filed Feb. 2, 1973, Ser. No. 329,026

Claims priority, application Japan, Feb. 14, 1972, 47/15,886, 47/15,887

Int. Cl. C07c *121/20*

U.S. Cl. 260—465.5 R 5 Claims

1. In a process for the production of diaminomaleonitrile prepared by tetramerizing hydrogen cyanide in a dimethyl formamide or dimethyl sulfoxide solvent in the presence of an alkali catalyst, the improvement comprising recovering purified diaminomaleonitrile by:

(A) mixing the entire reaction mass of the above preparation (containing diaminomaleonitrile, high boiling point by-products, dimethyl formamide or dimethyl sulfoxide, and an alkali catalyst) with at least one liquid selected from the group consisting of:

(1) an aliphatic chlorinated hydrocarbon which is methylene chloride, chloroform, 1,2-dichloroethane, ethylene dichloride, trichloroethylene, or tetrachloroethane;

(2) an aliphatic carbon chloride which is carbon tetrachloride; and

(3) an aromatic hydrocarbon which is benzene, toluene, xylene or 1,2,4-trimethylbenzene

with the provisos that the amount of liquid is 3 to 20 times by volume of the volume of the entire reaction mass and the mixing temperature is at least room temperature;

(B) separating the mixture into a solid component containing undesirable impurities and a liquid mixture; and

(C) distilling off the liquid mixture to recover the purified diaminomaleonitrile.

3,842,116

15-HYDROXYPROST-13-ENOIC ACID DERIVATIVES

Kiyoshi Sakai, Takashi Yusa, Masaaki Sasaki, Shigeo Amemiya, Mitsuo Yamazaki, and Koichi Kojima, Tokyo, Japan, assignors to Sankyo Company Limited

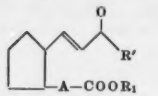
No Drawing. Continuation of abandoned application Ser. No. 180,453, Sept. 14, 1971. This application Apr. 3, 1973, Ser. No. 347,577

Claims priority, application Japan, Sept. 19, 1970, 45/82,238; Sept. 28, 1970, 45/84,800

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D 5 Claims

1. A compound having the formula



wherein A represents a straight or branched alkylene group having from 4 to 8 carbon atoms, R′ represents a straight or branched alkyl group having from 3 to 7 carbon atoms, and R^2 represents a hydrogen atom or a straight or branched alkyl group having from 1 to 5 carbon atoms.

3,842,117

15-OXOPROST-13-ENOIC ACID DERIVATIVES

Kiyoshi Sakai, Takashi Yusa, Masaaki Sasaki, Shigeo Amemiya, Mitsuo Yamazaki, and Koichi Kojima, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

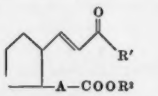
No Drawing. Continuation of abandoned application Ser. No. 181,242, Sept. 16, 1971. This application Apr. 3, 1973, Ser. No. 347,576

Claims priority, application Japan, Sept. 19, 1970, 45/82,238; Sept. 28, 1970, 45/84,800

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 5 Claims

1. A compound having the formula



wherein A represents a straight or branched alkylene group having from 4 to 8 carbon atoms, R′ represents a straight or branched alkyl group having from 3 to 7 carbon atoms, and R^2 represents a hydrogen atom or a straight or branched alkyl group having from 1 to 5 carbon atoms.

3,842,118

15-METHOXY PGE_2

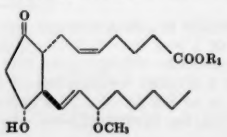
Frank H. Lincoln, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application May 4, 1971, Ser. No. 140,252, now Patent No. 3,781,325. Divided and this application Jan. 26, 1973, Ser. No. 326,643

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 4 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation.

3,842,119

HYDROXYPROPANE SULFONATES OF C_{21}-CYCLOALIPHATIC ACIDS

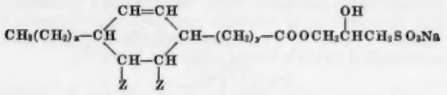
Alan M. Bills, Summerville, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Filed June 28, 1973, Ser. No. 374,551

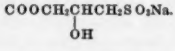
Int. Cl. C07c *143/22*

U.S. Cl. 260—468 K **2 Claims**

1. Bis-hydroxypropane sulfonates of the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, and one Z is H and the other Z is



3,842,120

2-METHYL - 2-[p-(N-PHENYLFORMIMIDOYL) PHENOXY]PROPIONIC ACID ESTERS AND CONGENERS

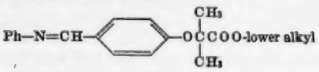
William K. Sprenger, Des Plaines, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,143

Int. Cl. C07c *101/44*

U.S. Cl. 260—471 R **10 Claims**

1. A compound of the formula



wherein Ph represents phenyl optionally substituted by halogen of atomic number greater than 9 and less than 33, hydroxyl, or fewer than 4 lower alkoxys.

3,842,121

CATALYST FOR REDUCTION OF CARBON MONOXIDE

Masaru Ichikawa, Tokorozawa, Shuichi Naito and Kohei Kawase, Sagamihara, and Kenzi Tamaru, Kamakura, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

No Drawing. Original application Sept. 29, 1971, Ser. No. 184,907, now abandoned. Divided and this application Feb. 20, 1973, Ser. No. 333,720

Claims priority, application Japan, Oct. 2, 1970, 45/85,896; Dec. 11, 1970, 45/109,362

Int. Cl. C07c *27/06, 1/04*

U.S. Cl. 260—449 R **7 Claims**

1. In the synthesis of hydrocarbons by reaction of carbon monoxide and hydrogen in the presence of a catalyst, the improvement which comprises conducting said reaction at a temperature of from 250° C. to 400° C. in the presence of an electron donor-acceptor complex catalyst consisting essentially of

(a) an alkali metal,

(b) graphite, and

(c) a chloride of a transition metal selected from the group consisting of Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table, and wherein the weight ratio of said chloride to graphite is a 0.001–10:1 and of said alkali metal to graphite and chloride is 0.1–10:1.

3,842,122

TREATING TAR SANDS BITUMEN

Ronald H. Wolk, Trenton, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

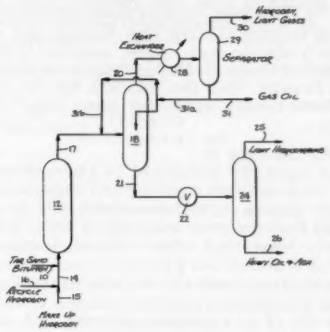
Filed Dec. 29, 1972, Ser. No. 319,315

Int. Cl. C10g *1/00, 9/16, 23/00*

U.S. Cl. 208—48 Q **1 Claim**

1. In a process for refining a tar sand derived material selected from the group consisting of natural tar and bitumen, which refining process includes the steps of passing the feed substantially in the liquid phase through a reaction zone in the presence of a hydrogen-containing gas under temperature in the range of 700 to 950° F. and hydrogen partial pressure in the range of 200 to 1500 p.s.i. wherein the effluent is removed from the reaction zone and passed to a separation zone and wherein the effluent is separated into at least a vapor fraction and a liquid fraction, the improvement which comprises:

(a) maintaining a temperature in the separation zone in the range of 500° F. to 800° F.;



(b) maintaining the superficial linear velocity of the downflowing liquid in separation zone in the range of 0.006 to 1.0 foot per second the lower temperature requiring the lower velocity;

(c) the range of temperature versus liquid velocity being a substantially linear relation of temperature versus a log-log scale of downflow liquid velocity;

(d) the space velocity of the feed through the reaction zone and the temperature being such that at least 50 percent of the feed boiling above 975° F. is converted to material boiling below 975° F.;

(e) and thereby avoiding coking of the separator.

3,842,123

METHYLENETETRACYCLINE FORMATE ESTER

Luigi Bernardi, Via Pinerolo 30; Roberto de Castiglione, Via Domenichino 38; and Vincenzo Colonna, Via C. Farini 72, all of Milan, Italy

No Drawing. Filed June 29, 1970, Ser. No. 50,908

Claims priority, application Italy, Aug. 8, 1969, 20,699/69; Sept. 4, 1969, 21,624/69

Int. Cl. C07c *103/28*

U.S. Cl. 260—490 **1 Claim**

1. 6 - demethyl-6-deoxy-6-methylene-5-formyloxy-tetracycline.

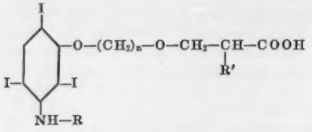
3,842,124

ORALLY ADMINISTERED CONTRAST AGENTS FOR CHOLECYSTOGRAPHY

Ernst Felder and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica, Societa per Azioni, Milan, Italy

Filed Nov. 26, 1971, Ser. No. 202,381
Claims priority, application Switzerland, Dec. 15, 1970, 18,621/70
Int. Cl. C07c *101/72*
U.S. Cl. 260—501.11 6 Claims

1. A compound which is a 3-[(3-acylamino-2,4,6-triiodophenoxy)-alkoxy]-2-alkylpropionic acid of the formula



or a water-soluble salt of said acid with a physiologically tolerated metal or amine, in said formula R being acetyl or propionyl, R′ being methyl or ethyl, and *n* being an integer between 2 and 4.

3,842,125

PROCESS FOR THE PRODUCTION OF (+)-TRANS-CHRYSANTHEMIC ACID

Fukashi Horiuchi and Akio Higo, Nishiinomiya, and Hirosuke Yoshioka, Ikeda, Japan, assignors to Sumitomo Chemical Company, Limited, Higashi-ku, Osaka, Japan

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,705
Claims priority, application Japan, Jan. 7, 1972, 47/4,821
Int. Cl. C07c *61/04*
U.S. Cl. 260—514 H 4 Claims

1. A process for isolation of (+)-trans-chrysanthemic acid, which comprises dissolving (±)-trans-chrysanthemic acid or (±)-cis, trans-chrysanthemic acid in a solvent selected from the group consisting of water, lower alkyl alcohols, lower alkyl ethers, dioxane, tetrahydrofuran, lower alkyl ketones and a mixture thereof, adding (—)-α-(1-naphthyl)-ethylamine to the solution, cooling the resulting homogeneous solution to deposit crystals of the amine salt of (+)-trans-chrysanthemic acid, decomposing the salt by an acid or an alkali, and recovering (+)-trans-chrysanthemic acid.

3,842,126

CATALYTIC PRODUCTION OF POLYHALO-KETO-ALKENOIC ACIDS

William A. Erby, Alburtis, and James F. Tompkins, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Continuation of abandoned application Ser. No. 723,283, Apr. 22, 1968. This application Sept. 26, 1972, Ser. No. 292,384
Int. Cl. C07c *59/18*
U.S. Cl. 260—539 R 9 Claims

1. A method for producing C_5 to C_{10} polychlorinated or polybrominated 4-keto-alkenoic acids, which comprises the steps of direct combined catalytic halogenation and dehydrogenation of C_5 to C_{10} 4-keto monocarboxy alkanoic acids with elemental chlorine or bromine in the presence of a catalyst amount of at least one cation selected from the group consisting of aluminum, zinc, titanium, cobalt, magnesium and calcium, wherein the reaction is initiated at substantially ambient temperature and during said time period the temperature is gradually raised to a final temperature of from 170° C. to 210° C., the reaction being controlled by the rate of chlorine or bromine sufficient to prevent the temperature exceeding 210° C.

3,842,127

PROCESS FOR PREPARING FLUOROPERHALO-AZAOLEFINS

Cyril Woolf, Morristown, Bryce Clifford Oxenrider, Florham Park, and Wilhelmus Maria Beyleveld, Whippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Feb. 26, 1970, Ser. No. 14,652, now Patent No. 3,705,917. Divided and this application Sept. 28, 1972, Ser. No. 293,266
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 9 Claims

1. A process for preparing fluoroperhaloazaolefins having the formula

wherein Y_1 and Y_2 are independently fluorine or fluoroperhaloalkyl radicals having either the formula

$$CF_2X(CFX)_m—$$

wherein X is fluorine, chlorine or bromine and *m* is 0 to 6, or the formula —$CF(CFX)_n$ wherein X is fluorine, chlorine or bromine and *n* is 3 to 5, which process comprises reacting, under substantially anhydrous conditions at a temperature below 200° C., a carbonyl compound having the formula

wherein Z_1 is Y_1 as defined above or chlorine, bromine or iodine, with an ionizable fluoride salt capable of forming an alcoholate salt with the carbonyl compound and being selected from the group consisting of potassium fluoride, rubidium fluoride, cesium fluoride, silver fluoride, and tetra(lower alkyl) ammonium fluorides, in the presence of an aprotic, polar, liquid reaction medium, thereafter reacting said alcoholate salt with a cyanogen halide, and wherein less than 1 mole of cyanogen halide is added to the reaction mixture for each mole of carbonyl compound and fluoride salt employed and separating the resulting fluoroperhaloazaolefin from the reaction mixture.

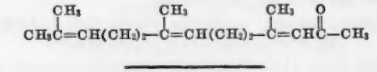
3,842,128

ARTHROPOD MATURATION INHIBITORS

Meyer Schwarz, Kensington, Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, Md., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,781. Divided and this application Apr. 6, 1973, Ser. No. 348,552
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 R 2 Claims

1. A compound of the general formula



3,842,129

ORGANIC PEROXIDES

Yun Ger Chang and Philip S. Bailey, Austin, Tex., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Original application Aug. 10, 1971, Ser. No. 170,621, now Patent No. 3,755,454, dated Aug. 28, 1973. Divided and this application Nov. 29, 1972, Ser. No. 310,560
Int. Cl. C07c *49/04*
U.S. Cl. 260—594 2 Claims

1. An organic peroxide namely 6-t-butylperoxy-2,6-dimethyl-2-hepten-4-one.

3,842,130

PROCESS FOR PREPARING 2,3,5-TRIMETHYL HYDROQUINONE

Takuo Kawaguchi and Takashi Nishida, Kurashiki, Yoshiaki Ohmura, Okayama, Masahisa Tanomura, Kurashiki, Kozo Nakao, Okayama, and Toshiaki Takagi, Yoichi Ninagawa, and Kazuo Itoi, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed Nov. 6, 1972, Ser. No. 303,912

Claims priority, application Japan, Nov. 5, 1971, 46/88,436, 46/88,437

Int. Cl. C07c *37/00*

U.S. Cl. 260—621 H 7 Claims

1. A process for producing pure white, crystalline 2,3,5-trimethyl hydroquinone which comprises contacting 2,3,5-trimethyl benzoquinone, dissolved in a carboxylic acid ester having the following formula:

RCOOR'

wherein R is hydrogen or an alkyl radical having from 1 to 6 carbon atoms, and R' is an alkyl radical having from 1 to 8 carbon atoms, provided that the total number of carbon atoms is not more than 12, the weight ratio of carboxylic acid ester to benzoquinone being in the range of from about 3:1 to 50:1 with hydrogen gas in the presence of a hydrogenating catalyst selected from the group consisting of platinum, palladium and nickel, at a temperature within the range of 0° C. to 150° C., and a hydrogen gas pressure within the range of 1 to 200 atmospheres, precipitating the 2,3,5-trimethyl hydroquinone from solution, and recovering the 2,3,5-trimethyl hydroquinone.

3,842,131

PROCESS FOR CONDUCTING A DIELS-ALDER REACTION

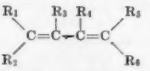
Yoshihiro Watanabe, Seiji Suzuki, Tooru Tokumaru, and Hiroshi Yoshihara, Osaka, and Takeshi Yamahara, Hyogo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed May 22, 1973, Ser. No. 362,706

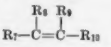
Int. Cl. C07c *13/54*

U.S. Cl. 260—666 PY 4 Claims

1. In a process for conducting a Diels-Alder reaction by reacting a conjugated diolefin represented by the following structural formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 each represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an acyl group, or an oxycarbonyl group, with an olefin having an activated double bond represented by the following structural formula:



wherein R_7, R_8, R_9 and R_{10} may be the same or different, R_7 represents an alkenyl group, an aryl group, an aralkyl group, an alkoxy group or a carbonyl-containing group and R_8, R_9 and R_{10} each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, an alkoxy group or a carbonyl-containing group to form the Diels-Alder reaction product by the 1,4-addition of said olefin to said conjugated diolefin, the improvement of suppressing the formation of by-product thereby increasing the yield of the Diels-Alder reaction product which comprises feeding dividedly the conjugated diolefin or the olefin incrementally through at least two inlets into a tubular reactor.

3,842,132

DEHYDROGENATION OF OLEFINIC HYDROCARBONS

Ching-Tsan Lo, Joe Jed Miller, and Norbert Francis Cywinski, Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,327

Int. Cl. C07c *5/18*

U.S. Cl. 260—669 R 12 Claims

1. A method for the dehydrogenation of olefinic hydrocarbons to form olefins and/or diolefins without the addition of air or oxygen comprising contacting said olefinic hydrocarbons with a dehydrogenation catalyst comprising a vanadate of a Group IV–A and/or V–A metal optionally promoted by a compound of Group V–B, VI–B, or VIII of the Periodic Table of the Elements.

3,842,133

METHOD FOR MAKING A POLYMERIC FUSION ADHESIVE PRACTICALLY FREE OF ORGANIC SOLVENTS AND WHICH IS MELTABLE AND SOLUBLE IN ORGANIC SOLVENTS

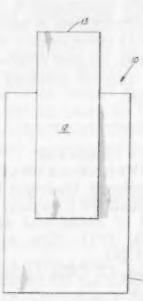
Horst Dalibor, Harksheide, Richard Gutte, Oststeinbek, and Gunter Stenzel, Hamburg, Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Continuation-in-part of abandoned application Ser. No. 95,796, Dec. 7, 1970. This application Jan. 16, 1973, Ser. No. 324,181

Claims priority, application Switzerland, Dec. 8, 1969, 516,607/69

Int. Cl. C08f *1/00, 15/40, 27/18*

U.S. Cl. 260—80.73 8 Claims



1. A method for making a polymeric fusion adhesive practically free of organic solvents and which is meltable and soluble in organic solvents and the liquid melt of which can be worked satisfactorily, which consisting essentially of

(1) heating a mixture of
   (a) 1 to 20% by weight of acrylonitrile,
   (b) 1 to 20% by weight of acrylamide,
   (c) 40 to 97% by weight of 2-ethylhexylacrylate,
   (d) 1 to 30% by weight of methyl methacrylate in an organic solvent to a temperature of about 100° C. to 140° C.;

(2) adding a polymerization initiator to said heated mixture, and

(3) removing organic solvent from said mixture after samples of the resulting polymeric mixture indicate that the polymer has the viscosity of 100 to 600 DIN 6 seconds measured at 20° C. as 50% strength by weight in xylene solution and showing good adhesive properties in the temperature range of 0° to 50° C.

3,842,134
POLYMERIZATION PROCESS

Robert E. Pratt, Costa Mesa, Calif., assignor to Bray Oil Company, Los Angeles, Calif.

No Drawing. Filed June 9, 1972, Ser. No. 261,514
Int. Cl. C07c 3/18
U.S. Cl. 260—683.15 B 7 Claims

1. A process for the controlled polymerization of linear alpha olefines containing from 6 to 12 carbon atoms into polymer oils containing high percentages of trimeric and tetrameric products possessing low pour points, low viscosities, high viscosity indexes, and high flash points, said products being suitable for the formulation of light lubricating oils and hydraulic fluids, said process comprising the following steps:

(a) reacting a linear alpha olefine of 6 to 12 carbon atoms at a temperature between 180° and 250° F., with a catalyst comprising a mixture of anhydrous aluminum chloride with a mononitroalkane having one to three carbon atoms in a ratio of 1 to 6 mols of mononitroalkane to each mol of aluminum chloride, and

(b) removing catalyst from the polymer oil product and fractionating the oil to recover therefrom an oil fraction composed of the desired polymers of the alpha olefine starting material.

3,842,135
CATALYTIC ISOMERIZATION OF ALPHA-PINENE

Curry Beach Davis and Joseph J. McBride, Jr., Panama City, Fla., assignors to Arizona Chemical Company, New York, N.Y.

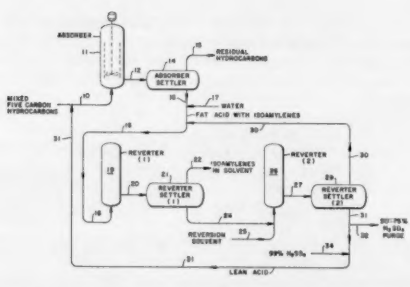
No Drawing. Filed Feb. 26, 1973, Ser. No. 335,844
Int. Cl. C07c 13/00; C09f 3/02
U.S. Cl. 260—675.5 4 Claims

1. A process for the isomerization of a pinene-containing feed material which consists in heating said material in an inert atmosphere at temperatures between 75° C. and 175° C. in contact with catalyst consisting essentially of a carbonate-activated carbon whereby camphene is recovered in good yield.

3,842,136
ISOAMYLENE EXTRACTION

Theodore A. Wandstrat, Houston, Tex., assignor to Shell Oil Company

Continuation-in-part of abandoned application Ser. No. 158,331, June 30, 1971. This application May 10, 1973, Ser. No. 359,161
Int. Cl. C07c 11/00
U.S. Cl. 260—677 A 3 Claims



1. In a continuous process for the recovery of isoamylenes from a mixture consisting essentially of other five-carbon hydrocarbons wherein the hydrocarbon mixture containing isoamylenes is contacted with 50–75% by weight sulfuric acid in an absorption zone to form an isoamylene-fat acid extract which is then contacted with an inert hydrocarbon solvent extractant having a different boiling range than isoamylene in a reversion zone to separate the isoamylenes from the acid and form a lean acid which is then in part purged and replenished by make-up acid and then recycled to the absorption zone, the improvement which comprises adding the make-up acid as two separate components, a 90% by weight or greater concentration sulfuric acid addition to the lean recycle acid and a water addition to the isoamylene-fat acid extract in an amount sufficient to dilute said added acid essentially to the concentration of the purged acid; whereby the concentration of sulfuric acid in the absorption zone is greater than said acid concentration in the reversion zone.

3,842,137
SELECTIVE HYDROGENATION OF C_4 ACETYLENIC HYDROCARBONS

Roland Libers, Dickinson, and Claude W. Smalling, Jr., Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.

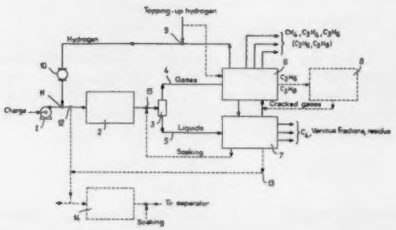
No Drawing. Filed Jan. 2, 1973, Ser. No. 320,431
Int. Cl. C07c 7/00
U.S. Cl. 260—681.5 R 10 Claims

1. A process for the selective hydrogenation of C_4 acetylenes in admixture with butadiene in the liquid phase which comprises reacting said C_4 hydrocarbon mixture with a stream of hydrogen diluted to not more than 25 mole percent hydrogen in inert gas in cocurrent upflow reaction over a Group VIII noble metal supported catalyst at a temperature of from 40° to 175° F. and under a pressure sufficient to maintain the C_4 hydrocarbon mixture substantially in liquid phase, said inert gas being inert to the hydrogenation reaction and not acting as a poison to said catalyst.

3,842,138
METHOD OF CRACKING HYDROCARBONS UNDER HYDROGEN PRESSURE FOR THE PRODUCTION OF OLEFINS

Edgar Chahvekilian and Jean Marc Plichon, Paris, France, assignors to Pierrefitte-Auby, Paris, France

Filed Dec. 20, 1972, Ser. No. 316,693
Claims priority, application France, Dec. 21, 1971, 7145824; Oct. 24, 1972, 7237583
Int. Cl. C07c 3/40; C10g 13/28
U.S. Cl. 260—683 R 11 Claims



1. A process for thermally cracking a hydrocarbon feedstock to convert it into lower molecular weight products containing large proportions of olefins comprising conducting said process in a heated reactor under superatmospheric pressures, ranging from about 10 bars to about 70 bars read at the reactor outlet, in the presence of hydrogen used in such amounts that its molar concentration in the effluent from the cracking section be not lower than 20%, at reactor outlet temperatures higher than about 625° C. to about 1100° C. and with residence

times within the reaction section shorter than about 0.5 second down to about 0.005 second, adjusting said residence time in a decreasing manner with an increase of the cracking temperature, and providing an efficient means to control the extent of the destructive and hydrogenating action of hydrogen under pressure as well as the correlated heat effect, so that coking and useless over-hydrogenation of primary cracking products into paraffins are avoided, while obtaining controlled heat release capable of substantially reducing the over-all heat requirements of the cracking process.

3,842,139

DEHYDROGENATION OF PARAFFINS OVER A PLATINUM MAGNESIUM ALUMINATE SPINEL

William L. Kehl and Raymond J. Rennard, Jr., Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,030

Int. Cl. C07c *5/20*

U.S. Cl. 260—683.3 **15 Claims**

1. A process which comprises:

contacting a charge stock comprising at least one acyclic saturated hydrocarbon having from three to six carbon atoms per molecue and from 10 to 1000 p.p.m. of a sulfur containing compound selected from the group consisting of H_2S and an organic sulfur containing compound capable of forming H_2S under the conditions of reaction in the vapor phase under dehydrogenation conditions including a temperature from 300° C. to 700° C. and in the presence of added hydrogen

with a catalyst consisting essentially of platinum on a support consisting essentially of a magnesium aluminate spinel having a surface area from about 10 to about 250 $m.^2/g.$

3,842,140

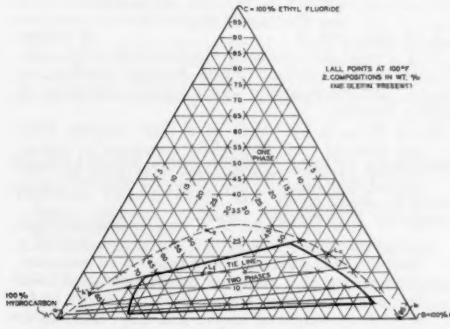
HF ALKYLATION OF ISOPARAFFIN WITH OLEFIN HEAVIER THAN ETHYLENE WITH ETHYL FLUORIDE AS REACTION IMPROVER

Thomas Hutson, Jr, and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 217,665, Jan. 13, 1972. This application Sept. 22, 1972, Ser. No. 291,372

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.51 **12 Claims**



1. A process for the alkylation of at least one isoparaffin with at least one olefin wherein an admixture consisting essentially of HF catalyst, ethyl fluoride, and a hydrocarbon comprising a major portion of isoparaffin and a minor portion of olefin is subjected to alkylation employing in the alkylation reaction system the ethyl fluoride in an amount to be effective as an activator or modifier for the HF catalyst and wherein said admixture is defined by the trapezoidal area indicated in the 3-component diagram of the figure which area represents substantially the existence of a 2-phase system.

3,842,141

SILICONE-EPOXY COPOLYMERS AND MOLDING POWDERS OBTAINED THEREFROM

Charles A. Fetscher, Olean, and John J. Sparapany, Allegany, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Continuation of abandoned application Ser. No. 228,236, Feb. 22, 1972. This application Jan. 31, 1973, Ser. No. 326,174

Int. Cl. C08g *45/16, 47/10*

U.S. Cl. 260—824 EP **17 Claims**

1. A solid, homogeneous silicone-epoxy resin copolymer, said copolymer consisting essentially of a hydroxy terminated poly-functional methyl phenyl silicone intermediate, and an epoxy resin having at least one hydroxyl group and a molecular weight of about 624 to 2000, the amount of said silicone intermediate being within the range of 15 to 40% by weight of said copolymer, and the proportions of said epoxy resin and silicone intermediate being such that the epoxy resin supplies at least the same number of epoxy hydroxyl groups as there are hydroxyl groups, reactive at 120° C., present in said silicone intermediate.

3,842,142

UNSATURATED POLYESTER COMPOSITIONS

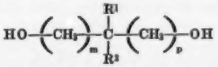
Michael A. Harpold, St. Albans, and Kenneth E. Atkins, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 20, 1972, Ser. No. 273,547

Int. Cl. C08f *43/08*

U.S. Cl. 260—862 **11 Claims**

1. A composition comprising an unsaturated polyester which is the condensation reaction product of a mixture consisting essentially of an unsaturated, dicarboxylic acid or anhydride thereof, an aromatic dicarboxylic acid or anhydride thereof in an amount of about 5 to 30 percent by weight, based on the combined weight of the unsaturated, dicarboxylic acid and the aromatic dicarboxylic acid, and a glycol having the formula:



wherein the sum of $m+p$ is at least one and R^1 and R^2 are hydrogen or alkyl having 1 to 20 carbon atoms; and a thermoplastic copolymer, in an amount of about 10 to about 85 percent by weight based on the weight of said unsaturated polyester, of vinyl chloride and vinyl acetate having a combined vinyl chloride content of about 35 to about 45 percent by weight.

3,842,143

PROCESSABLE POLYIMIDES AND POLYAMIDE-IMIDES CONTAINING POLYOLEFINIC UNSATURATED IMIDES

Roland A. E. Winter, Armonk, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

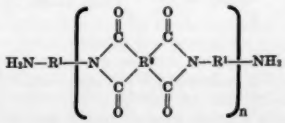
No Drawing. Filed Nov. 2, 1972, Ser. No. 303,299

Int. Cl. C08g *41/04*

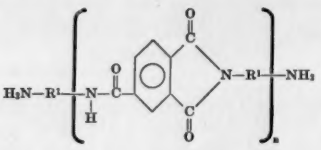
U.S. Cl. 260—857 PA **17 Claims**

1. A composition of matter comprising

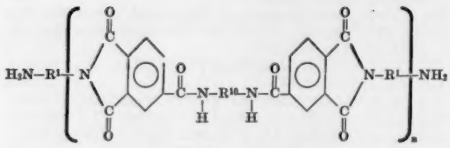
(a) a polyimide resin having the formula



or a polyamide-imide resin having the formulas



and

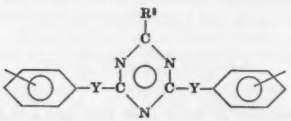


wherein

R^9 is a tetravalent aliphatic, cycloaliphatic, aromatic or heterocyclic radical containing at least 2 carbon atoms;

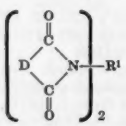
R^1 and R^{10} are the same or different and each is an alkylene group containing from 2 to 12 carbon atoms; a cycloalkylene group containing from 4 to 6 carbon atoms; a xylylene group, an arylene group selected from phenylene, xylene, tolylene, biphenylene, naphthylene, a substituted arylene group of the formula

wherein W is sulfur, carbonyl, —NH, —N— (lower) alkyl, —O—, —N— phenyl, sulfonyl, an alkylene group of from 1 to 3 carbon atoms, R^6 and R^7 are independent and each is hydrogen, chloro, or bromo, (lower) alkyl containing from 1 to 5 carbon atoms, (lower) alkoxy containing from 1 to 5 carbon atoms, or

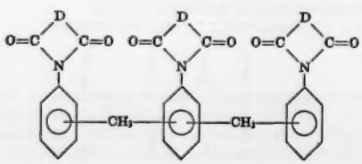


wherein Y is a covalent bond or —NH, and R^8 is phenyl, piperidino, H, diphenylamino or di(lower)alkyl amino; and n is an integer of from 1 to 100; and

(b) from about 0.5 to about 5.0 mole equivalents per mole of (a) of a polyolefinic unsaturated imide compound of the formula

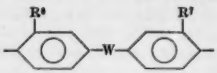


or

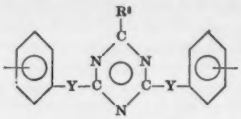


wherein

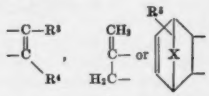
R^1 is an alkylene group containing from 2 to 12 carbon atoms; cycloalkylene group containing from 4 to 6 carbon atoms, a xylylene group, an arylene group selected from phenylene, tolylene, biphenylene, naphthylene, a substituted arylene group of the formula



wherein W is sulfur, carbonyl, —NH, N—(lower)alkyl, —O—, —N—phenyl, sulfonyl, an alkylene group of from 1 to 3 carbon atoms, R^6 and R^7 are independent and each is hydrogen, chloro, or bromo, (lower)alkyl of from 1 to 5 carbon atoms, (lower) alkoxy containing from 1 to 5 carbon atoms, or a group having the formula



where Y is a covalent bond or —NH, and R^8 is phenyl, piperidino, hydrogen, diphenylamino or di(lower)alkylamino; D is a divalent radical containing olefinic unsaturation having the formula



wherein

R^3 is hydrogen, methyl, bromo or chloro;

R^4 is hydrogen, bromo or chloro;

R^5 is hydrogen or methyl, and

X is oxygen or methylene.

3,842,144

PROCESS FOR PRODUCING BLENDS OF VINYL CHLORIDE RESIN COMPOSITION

Takashi Tanaka, Haruhiko Yusa, and Susumu Chubachi, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,577
Claims priority, application Japan, Oct. 7, 1971, 46/78,996; May 22, 1972, 47/50,549
Int. Cl. C08f *15/00, 14/00*
U.S. Cl. 260—876 R **7 Claims**

1. A method for producing vinyl chloride resin composition having excellent impact strength, weather resistance, and processability which consists essentially of uniform blending:

95 to 70 parts by weight of a vinyl chloride polymer selected from the group consisting of homopolymer of vinyl chloride, and copolymers of vinyl chloride containing therein more than 70% by weight of vinyl chloride; and

5 to 30 parts by weight of a multi-component type resin consisting of (a) 50 to 75 parts by weight of a cross-linked copolymer rubber which is an emulsion-polymerizate of a monomer mixture [selected from the group] consisting essentially of a mixture of 60 to 95% by weight of acrylic acid alkyl ester, 40 to 5% by weight of butadiene, and 0.01 to 3% by weight of a cross-linking agent, and (b) 50 to 25 parts by weight of monomer mixture consisting of 10 to 90% by weight of styrene and 90 to 10% by weight of methylmethacrylate and 0.01 to 3% of a cross-linking agent, the monomer mixture being graft-polymerized upon said cross-linked copolymer rubber.

3,842,145

POLYMERIZATION OF UNSATURATED MONOMERS WITH MULTILITHIUM INITIATORS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Jan. 21, 1971, Ser. No. 108,612, now Patent No. 3,725,488. Divided and this application Dec. 21, 1972, Ser. No. 317,160

Int. Cl. C08d 1/32; C08f 19/06

U.S. Cl. 260—879 23 Claims

1. A polymerization process which comprises polymerizing at least one polymerizable monomer comprising a polymerizable conjugated diene, polymerizable monovinyl-substituted aromatic compound, or both, in the presence of the multilithium polymerization initiator prepared by the process comprising admixing in the presence of a hydrocarbon diluent (I) at least one organomonolithium compound which is sec-alkyllithium, tert-alkyllithium, or cycloalkyllithium compound with (II) multimethyl aromatic hydrocarbon compound containing up to 5 carbocyclic rings and only aromatic rings per molecule wherein said multimethyl aromatic hydrocarbon compound contains 2 to 10 methyl groups and a total of 8 to 30 carbon atoms per molecule and in addition thereto can contain hydrocarbyl substituents in addition to said methyl groups selected from the group consisting of alkyl, cycloalkyl, and aralkyl, containing 2 to 10 carbon atoms per group.

3,842,146

POLYMERIZABLE DIBLOCK MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION AND THEIR PREPARATION

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill., assignors to CPC International Inc.

No Drawing. Continuation-in-part of application Ser. No. 282,099, Aug. 21, 1972, which is a continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which in turn is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971, now abandoned. This application Apr. 2, 1973, Ser. No. 347,116

Int. Cl. C08f 15/00

U.S. Cl. 260—879 28 Claims

1. A polymerizable diblock macromolecular monomer of the formula: A—B—X wherein A is a polymerized monoalkenyl substituted aromatic hydrocarbon, B is a polymerized conjugated diene, and X is a polymerizable end group containing either a vinyl moiety, a vinylene moiety or an epoxy moiety, said diblock macromolecular monomer having a molecular weight in the range of from about 5,000 to about 150,000 and having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is less than about 1.1, said diblock macromolecular monomer being further characterized as having no more than one vinyl moiety, vinylene moiety or epoxy moiety on the terminal portion per linear copolymer chain.

3,842,147

CRYSTALLINE POLY-ALPHA-OLEFINE COMPOSITION HAVING IMPROVED DYEABILITY

Toshiharu Tomatu, Otake, and Tadao Iwata, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Nov. 3, 1972, Ser. No. 303,513

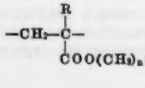
Int. Cl. C08f 37/18

U.S. Cl. 260—897 B 8 Claims

1. A crystalline poly-α-olefine composition comprising a blend of:

(A) a crystalline poly-α-olefine, and

(B) a water-insoluble modified poly-α-olefine comprising a random copolymer of α-olefine units and units of the following formula



(1)

wherein R is a hydrogen atom and/or methyl group, M is an alkali metal, and n is an integer of 3 to 4; said units of formula (1) being derived from a monomer selected from the group consisting of:

(a) acrylic acid, methacrylic acid or the alkali metal salts thereof further reacted with a sultone; and

(b) sulfonalkyl ester of acrylic acid, methacrylic acid or the alkali metal salts thereof, the amount of said units of formula (1) is 0.001 to 1.5 Meq. per gram of said composition.

3,842,148

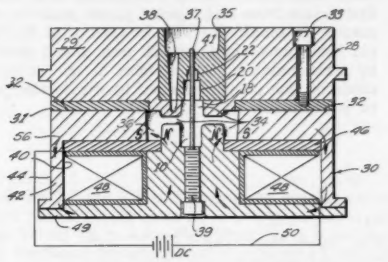
METHOD OF MAKING AN INTEGRAL MAGNETIC ROTOR AND GEAR

Robert J. Loubier, 1811 N. Glendale, Fort Wayne, Ind. 46804

Filed Apr. 14, 1972, Ser. No. 244,130

Int. Cl. B06b 1/02; B29f 1/00

U.S. Cl. 264—24 5 Claims



1. The method of fabricating an integral rotor assembly for a dynamoelectric machine, said rotor assembly including a rotor and a force-transmitting element, said assembly being molded of a mixture of thermoplastic and permanently magnetizable particles, said rotor having a magnetized peripheral portion, said element being spaced radially inwardly from said peripheral portion and not being magnetized; comprising the steps of mixing predetermined quantities of thermoplastic and magnetizable particles, injection molding said assembly of said mixture, said molding step including the melting of said thermoplastic and permitting it to cool and thereby solidify, magnetically orienting said particles by passing flux lines radially through said peripheral portion during the period when said thermoplastic is molten, shunting the flux lines away from said force-transmitting element, and causing said thermoplastic to solidify thereby securing said particles in said peripheral portion in magnetically oriented position.

3,842,149

METHOD FOR BLOW PIN ACTUATION IN INJECTION BLOW MOLDING

Gary L. Vollers, Upland, Calif., assignor to Trans Container Corporation, Los Angeles, Calif.

Continuation of abandoned application Ser. No. 153,689, June 16, 1971. This application Apr. 11, 1973, Ser. No. 349,954

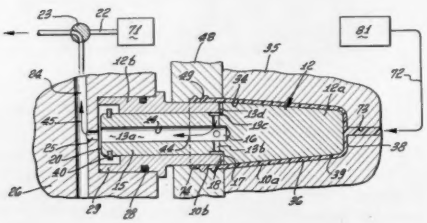
Int. Cl. B29c 17/07

U.S. Cl. 264—97 2 Claims

1. In the method of rapidly forming plastic containers using a blow pin containing flow porting for passing blow gas through the pin for application to the article, the pin including first and second sections that are relatively movable to valve control the porting, the second section being tubular and having a bore and the first section

including a tubular plunger slidable within said bore and a portion projecting from and second portion, said porting having radial extent between said sections, the steps that include

(a) forming a plastic parison about said projecting portion of the first section and about said porting at the periphery of the second section thereby effecting relative movement of said sections to fully collapsed condition and reduction in cross-sectional area of said porting radial extent, and positively blocking at the porting said section relative movement to prevent complete closure at all times of said porting radial extent to allow gas flow radially inwardly from the periphery of the second section to the interior of the plunger, said forming step being carried out by relatively inserting the pin into an injection mold cavity prior to said injection forming, said injection forming being carried out to fill the cavity about the pin with injected plastic material under pressure and to an extent overlying the partly open porting at the pin exterior, said relative movement being carried out by transmitting force to said first section from said injected plastic material, said porting communicating with the exterior of the blow pin being maintained in such near closed position by maintenance of said sections in said collapsed condition that plugging thereof by the injected plastic is precluded, and



(b) withdrawing the pin and formed plastic parison thereon from the injection mold cavity and relatively inserting the pin with a formed plastic parison thereon into a blow mold cavity, and while the sections remain in said fully collapsed condition, and thereafter applying blow gas pressure to said first section plunger to effect relative movement of the first section from fully collapsed to extended position relative to the second section thereby increasing the opening of said porting, and continuing said blow gas pressure application to flow through the pin via the increasingly opened porting to the pin exterior to expand the parison into container shape, the sections during said forming and withdrawal steps and prior to said blow pressure application being maintained free for said relative movements under the influence of pressures exerted by blow gas and injected plastic parison material.

3,842,150

METHOD FOR FORMING A TIRE

Russell W. Carter, Des Moines, Iowa, assignor to Corn States Metal Fabricators, Inc., Des Moines, Iowa

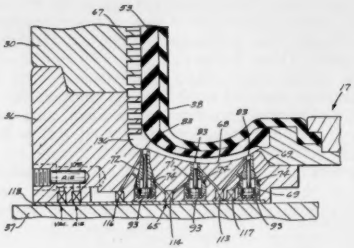
Filed Jan. 12, 1973, Ser. No. 323,041
Int. Cl. B29h 5/02
U.S. Cl. 264—102 **3 Claims**

1. The method for forming a tire wherein shaping pressure and heat are applied to a preformed tire band centered within a closed tire cavity and having an outer surface expandable against the inner surface of the side wall of a tire cavity, comprising the steps of:

(a) centering the preformed tire band about an expandable bladder within the tire cavity,

(b) expanding the bladder under an initial pressure to move the outer surface of the tire band to a position adjacent to but spaced from the inner surface of the tire cavity side wall,

(c) exhausting air from the space about said tire band through air passages in the tire cavity side wall having terminal ends open to the inner surface of said side wall to provide a subatmospheric pressure in said space,



(d) closing said terminal ends to maintain the subatmospheric pressure in said space concurrently with forming a smooth surface continuous with the inner surface of the cavity side wall;

(e) expanding the bladder into said space under a final pressure to move the outer surface of the tire band into conforming engagement with the inner surface of said cavity side wall,

(f) curing the tire band under said final pressure for a predetermined time period, and then

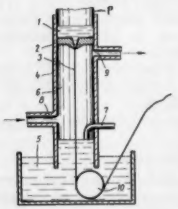
(g) releasing said final pressure and removing the formed tire from the tire cavity.

3,842,151

METHOD FOR PREPARING FIBERS FROM POLYMER SOLUTIONS

Vladimir Stoy, Artur Stoy, Josef Kucera, Jaroslav Prokop, and Renata Urbanova, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Filed Dec. 18, 1972, Ser. No. 316,006
Claims priority, application Czechoslovakia, Dec. 22, 1971, 8,911/71
Int. Cl. D01f 7/00
U.S. Cl. 264—203 **4 Claims**



1. A method of spinning a solution containing polymer dissolved in a solvent therefor, into fibrous filaments from a spinneret, comprising the steps of extruding said

polymer solution from said spinneret, passing said extruded polymer solution through a field of gaseous medium held at subatmospheric pressure, into which a portion of said solvent is removed from said polymer solution, continuously supplying gaseous medium to said field and simultaneouly exhausting gaseous medium carrying said solvent therefrom and thereafter passing said remaining polymer solution into a liquid coagulating bath and coagulating said remaining solution to form filaments, said field of gaseous medium being maintained at a pressure less than that of said liquid coagulating bath and while at least part of the surface of said liquid coagulating bath is in direct contact with said field of gaseous medium, the level of that part of the surface of said coagulating bath being dependent on the pressure of said gaseous medium thereon.

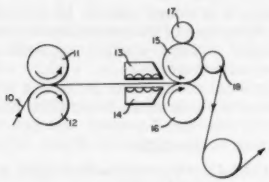
3,842,152
EMBOSSED POLYESTER FILM PREPARATION

Harold B. Witfield, Jr., Circleville, Ohio, and Thomas P. Bentley, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 65,291, Aug. 19, 1970, which is a continuation-in-part of application Ser. No. 985, Jan. 6, 1970, both now abandoned. This application Apr. 10, 1972, Ser. No. 242,817

Int. Cl. B29d *7/24*

U.S. Cl. 264—210 R **8 Claims**



1. A process including the steps of:

extruding a molten film-forming polymer onto a cool quenching surface;

stretching the film in the machine direction;

embossing one surface of the film after machine direction stretching and before transverse direction stretching in a manner whereby to permanently deform one surface of such film by

(a) heating the film to a temperature range R, between the second order transition temperature and about 60 centigrade degrees above the second order transition temperature,

(b) bringing only such one surface of the film into momentary contact with an embossing surface having a surface roughness of about from 30 to 500 microinches, A.A., and at a pressure of at least about 50 pounds per lineal inch, the embossing surface being heated to at least temperature range R, and

(c) quenching the embossed film to below the second order transition temperature; and

stretching the permanently deformed film up to about 4.2X in the transverse direction whereby to prepare a biaxially oriented film having one smooth and one irregular surface, such irregular surface having a pattern of flat ridges thereon resulting from the transverse orientation of the film after embossing whereby to improve winding properties of such film.

3,842,153
POLYPROPYLENE

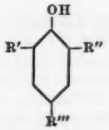
William J. Owen and Bryan Ewart Cooper, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, England

No Drawing. Original application July 20, 1970, Ser. No. 56,659, now Patent No. 3,723,402, dated Mar. 27, 1973. Divided and this application Apr. 26, 1972, Ser. No. 247,656

Int. Cl. C08f *29/02*

U.S. Cl. 264—211 **4 Claims**

1. A process for the production of a shaped article by the melt extrusion of thermally degraded isotactic polypropylene wherein the thermal degradation of the polypropylene is carried out in the presence of from 0.01 to 5 percent by weight, based on the weight of polypropylene of (a) an organosilicon compound which is an organosilane or organosiloxane having therein at least one silicon-bonded group of the general formula $—CH_2NR_2$, wherein each R represents a hydrogen atom or a monovalent hydrocarbon radical, (b) an organosilicon compound of the general formula



wherein R', R'' and R''' each represent a hydrogen atom, an alkyl radical having up to 18 carbon atoms, an aralkyl radical having up to 18 carbon atoms or a $Q_3SiCH_2—$ group, wherein Q represents an alkyl, alkenyl or aryl radical having up to 18 carbon atoms at least one of R', R'' and R''' being the $Q_3SiCH_2—$ group, or (c) mixtures of (a) and (b).

3,842,154
FABRICATION PROCESS FOR MULTIPHASED PLASTICS

Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application Nov. 17, 1971, Ser. No. 199,799. Divided and this application Feb. 12, 1973, Ser. No. 331,628

Int. Cl. B29b *3/02*

U.S. Cl. 264—294 **3 Claims**

1. A process for fabricating an article from a thermoplastic composition, said composition being a thermoplastic ionomer; i.e., a polymer having a thermoplastic backbone possessing ionic groups pendent thereto, said groups being capable of forming ionic domains, which comprises:

(a) adding a nonvolatile preferential plasticizer to said ionomer incorporated in said composition in the amount 0.1 to 50 mole per mole of ionic group; said plasticizer dispersible but not completely molecular soluble having a melting point substantially above the softening point of the thermoplastic backbone and which exhibits a bond moment whose absolute value is at least 0.6 Debyes;

(b) heating said ionomer to a temperature above the melting point of said plasticizer but below the decomposition temperature of said ionomer;

(c) forming said ionomer in a first desired shape at the temperature specified in part (b);

(d) re-forming to a second desired shape the former ionomer of part (c) at a temperature between that of the softening point of the thermoplastic backbone

and the melting point of the nonvolatile plasticizer; and

(e) cooling the re-formed ionomer to a temperature below said softening point.

3,842,155

TREATMENT OF WASTE MATERIALS GENERATED IN THE CONVERSION OF UF_6 TO UO_2 BY THE AUC ROUTE

Henricus Muller, Hanau (Main), Hans Pirk, Dornigheim, and Karl Hackstein, Hanau (Main), Germany, assignors to Nukem, GmbH, Hanau (Main), Germany

Continuation-in-part of application Ser. No. 835,509, June 23, 1969, now Patent No. 3,758,280. This application Nov. 22, 1971, Ser. No. 200,857

Claims priority, application Germany, Apr. 23, 1969, P 19 20 479.6; Nov. 25, 1970, P 20 57 966.2

The portion of the term of the patent subsequent to Sept. 10, 1990, has been disclaimed

Int. Cl. C01f *15/00;* **C01g** *43/00*

U.S. Cl. 423—15 **12 Claims**

1. In a process for the simultaneous recovery of NH_3, CO_2 and fluoride from NH_4^+, $CO_3^=$ and fluoride containing filtrate from the precipitation of tetraamonium uranyl tri carbonate the improvement comprising in a first phase of a circulatory process reacting said filtrate with a strongly acid aqueous solution of ammonium fluoride and ammonium hydrogen fluoride, liberating carbon dioxide and binding ammonia and reducing the acidity by such reaction, removing the liberated carbon dioxide from the filtrate, in a second phase of the circulatory process continuously evaporating the weakly acid and carbonate free solution so formed and thereby setting free ammonia, removing the ammonia set free and thereby regenerating the strongly acid solution, maintaining the fluoride content of the circuit constant by withdrawing from the circuit sufficient of the stream of strongly acid solution to prevent increase in fluoride, precipitating uranium from the said withdrawn stream by adding ammonia and hydrogen peroxide and removing fluoride ions from the remaining withdrawn stream by precipitating the fluoride as insoluble calcium fluoride by adding a calcium compound which is calcium oxide or calcium hydroxide.

3,842,156

NOVEL CATALYTIC PROCESS FOR THE PREPARATION OF POLYHALOHYPOCHLORITES

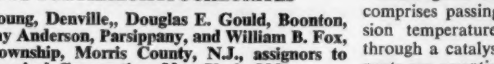
David E. Young, Denville,, Douglas E. Gould, Boonton, Lowell Ray Anderson, Parsippany, and William B. Fox, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,920

Int. Cl. C01b *17/45;* **C07c** *60/00, 71/00*

U.S. Cl. 423—466 **9 Claims**

1. In the process for preparing hypochlorites comprising reacting a starting compound selected from the group consisting of SOF_4 and a compound containing at least 4 atoms and having one of the following formulae:



wherein R′ is fluorine or an open-chain perhaloalkyl group and X is an open chain perhaloalkylene group and wherein the minimum number of fluorine atoms is at least equal to one half the total number of halogen atoms, with ClF; the improvement which consists of catalyzing the reaction by introducing catalytic amounts of a compound selected from the group consisting of gaseous HF, gaseous BF_3, gaseous AsF_5 and SbF_5.

3,842,157

PROCESS FOR THE PREPARATION OF SODIUM CARBONATE MONOHYDRATE FROM A SODIUM HYDROXIDE SOLUTION PRODUCED ACCORDING TO THE DIAPHRAGM PROCESS

Ulrich Neumann, Kiefernweg, West Germany, assignor to Chemiebau Dr. A. Zieren GmbH u. Co. KG, Cologne, Germany

Filed Feb. 14, 1972, Ser. No. 226,024

Claims priority, application West Germany, Feb. 12, 1971, P 21 06 786.7

Int. Cl. C01d *7/00*

U.S. Cl. 423—188 **13 Claims**

1. In a process for producing sodium carbonate monohydrate by carbonating at 70–110° C. in a single stage, a diaphragm process aqueous sodium hydroxide solution concentrated to 45–55% NaOH and contaminated with from 0.2 to 5% by weight of NaCl, with a CO_2-containing gas to form said monohydrate and simultaneously evaporate water from said solution, separating particulate monohydrate from its mother liquor, and recycling clarified mother liquor to the carbonation stage, the improvement comprising:

(a) dividing said clarified mother liquor into a first portion and a second portion;

(b) recycling the first portion comprising from about 60 to 95% by volume of said clarified mother liquor to said carbonation stage;

(c) passing the second portion comprising from about 40 to 5% by volume of said clarified mother liquor to an evaporator stage;

(d) evaporating said second portion to remove about 15 to 50% by volume of the mother liquor water content therefrom, thereby precipitating solid sodium carbonate monohydrate; and

(e) separating said monohydrate from said inorganic salt in a solution phase of the evaporation mixture.

3,842,158

EXHAUST GAS CONVERSION PROCESS AND CATALYST

Rowland C. Hansford, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,741

Int. Cl. B01d *53/00*

U.S. Cl. 423—213.5 **3 Claims**

1. A method for converting nitrogen oxides in engine exhaust gases selectively to elemental nitrogen, which comprises passing said exhaust gases at elevated conversion temperatures and under net reducing conditions through a catalyst composite in which the active components are essentially cobalt oxide and copper oxide in intimate admixture, or reduced forms thereof, the copper content of said catalyst being at least about 2% by weight as CuO, the cobalt content being at least about 6% by weight as Co_2O_3, and wherein the equivalent weight ratio of CuO/Co_2O_3 is between about 1/6 and 1/1.

3,842,159

METAL CATALYSTS AND METHOD

Leonard M. Niebylski, Birmingham, and Peter A. Immethun, Ferndale, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 211,732, Dec. 23, 1971. This application June 21, 1972, Ser. No 264,907

Int. Cl. B01d *53/34*

U.S. Cl. 423—213.5 **7 Claims**

1. A method for reducing the amount of nitrogen oxides, hydrocarbons and carbon monoxide in internal

combustion engine exhaust gas, said method being especially adapted for use with an engine operating at an air/fuel ration above stoichiometric, said method comprising contacting at engine exhaust temperatures said exhaust gas produced by operating said engine at an air-fuel ratio up to about 15.5 with massive nickel having a surface deposit thereon of a catalytic promoter quantity of a noble metal and of an alkali metal compound.

3,842,160

PROCESS FOR REDUCING EMISSION OF HYDROGEN SULFIDE WHEN WASHING SULFUR-DIOXIDE-CONTAINING WASTE GASES OBTAINED FROM THE BURNING OF CELLULOSE WASTE LIQUOR

Rolf Carl August Brannland, Husum, Bengt Goran Hultman, Domsjoverken, and Bertil Valdemar Hubert, Krist Inehamn, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,837

Int. Cl B01d *53/34*

U.S. Cl. 423—242 **12 Claims**

1. In the continuous process for absorbing sulfur dioxide in waste gases from the combustion of cellulose pulping waste liquors by scrubbing the gases with an aqueous washing liquor initially containing sulfide ion, at least part of which is capable of being released as hydrogen sulfide, the improvement which comprises inhibiting the emission of hydrogen sulfide by contacting the gases with an aged washing liquor having a pH within the range from about 6 to about 7, and scrubbing the gases therewith, blending the resulting liquor with an amount of an aqueous alkaline liquor containing sulfide ion to maintain the pH of the washing liquor within the range from about 6 to about 7 and ageing the resulting liquor while maintaining the pH within said range after the scrubbing and before recycling the resulting liquor into contact with additional sulfur dioxide-containing waste gases.

3,842,161

METHOD OF REFINING THE FLUORINE OBTAINED AS A BY-PRODUCT IN THE FERTILIZER INDUSTRY

Rolf Hyoky, Pori, Finland, assignor to Kemira Oy, Helsinki, Finland

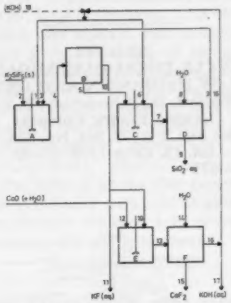
Filed Nov. 29, 1972, Ser. No 310,512

Claims priority, application Finland, Dec. 13, 1971, 3,446

Int. Cl. C01b *33/12*

U.S. Cl. 423—339 **6 Claims**

1. In the method of processing the fluorine obtained as a by-product in the fertilizer industry, by treating potassium silico fluoride with a hot solution containing a multiple molar quantity of potassium hydroxide, to form a potassium fluoride solution and a silica precipitate, the improvement comprising in a first stage mixing potassium hydroxide solution with solid potassium silico fluoride at a molar ratio of 2.5 to 3.5, a pH of 7.5 to 9.5 and a temperature of 75 to 85° C. whereby principally potassium fluoride solution and silica precipitate still containing some undissolved potassium silico fluoride are formed, separating pure potassium fluoride solution from the first stage by clarification, treating the precipitate in a second stage with such a quantity of potassium hydroxide solution that the ratio of the total molar quantity of the potassium hydroxide portions used in both treatment stages to the molar quantity of the potassium silico fluoride introduced will be 4 and a pH of 9.5 to 10.5 and a temperature of 80 to 90° C., separating the silica in the second treatment stage from the mother liquor by filtration, returning the mother liquor to the first stage and recovering potassium



fluoride solution as a product from the solution obtained by clarification after the first stage.

3,842,162

PROCESS FOR THE PRODUCTION OF NITRONIUM PERCHLORATE

Edward A. Fishkin, New York, N.Y., and Harry W. Wilson, Valencia, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 30, 1963, Ser. No. 320,608

Int. Cl. C01b *21/52*

U.S. Cl. 423—386 **2 Claims**

1. A method of producing nitronium perchlorate, NO_2ClO_4, in a Venturi tube reactor which comprises continuously introducing and intermixing in the throat of a Venturi tube reactor a first stream of ozone entrained in an inert carrier gas and a separate stream of nitrogen dioxide and chlorine dioxide entrained in a second inert carrier gas having a molar ratio of chlorine dioxide to nitrogen dioxide of from about 1.0 to about 1.3, whereby said ozone, nitrogen dioxide and chlorine dioxide react to produce solid nitronium perchlorate entrained in the gas stream leaving said reactor, said first ozone-containing stream being heated prior to introduction to the reactor to a temperature sufficient to produce a resultant temperature of between about 55° C. to about 75° C. in the intermixture of the two said gas streams introduced into the reactor.

3,842,163

PRODUCTION OF ALUMINUM CHLORIDE

Allen S. Russell, New Kensington, Noel Jarrett, Lower Burrell, and Philip T. Stoup, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 7, 1971, Ser. No. 178,080

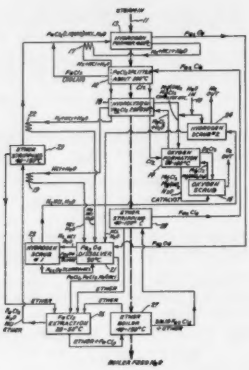
Int. Cl. C22b *1/08, 1/10;* **C01f** *7/60*

U.S. Cl. 423—496 **27 Claims**

1. Process for the production of aluminum chloride which comprises reacting chlorine at a temperature of between about 450°–800° C. with alumina having an average alpha alumina content of less than about 5% by weight and an average surface area of at least about 10 $m.^2/g.$, said alumina being intermixed with carbon and compositely having an average hydrogen content of less than about 0.5% by weight and an average carbon content of about 15–24% by weight based on the total alumina,

carbon and hydrogen contents present, to form a gaseous effluent containing aluminum chloride and carbon oxides in which at least about 25% by weight of such carbon oxides is carbon dioxide, and recovering the aluminum chloride from the gaseous effluent.

3,842,164
CLOSED-CYCLE THERMOCHEMICAL PRODUCTION OF HYDROGEN AND OXYGEN
Robert H. Wentorf, Jr., Schenectady, N.Y., assignor to General Electric Company
Filed Feb. 1 ,1973, Ser. No. 328,758
Int. Cl. C01b *1/03, 13/00*
U.S. Cl. 423—579 **5 Claims**



1. A process for the generation of hydrogen and oxygen comprising the steps of:

(a) reacting ferrous halide selected from the group consisting of ferrous chloride and ferrous bromide with steam at a temperature in excess of about 350° C. to produce solid iron oxide and a first gaseous mixture containing hydrogen, the respective hydrogen halide and steam,

(b) removing and cooling said first gaseous mixture,

(c) bringing the cooled first gaseous mixture into contact with the iron oxide formed to bring about dissolution thereof and produce a second gaseous mixture similar to said first mixture with reduced hydrogen halide content,

(d) separating and collecting hydrogen gas from said second gaseous mixture,

(e) removing the solution of ferrous halide, the respective ferric halide, water and hydrogen halide resulting from said dissolution,

(f) extracting ferric halide from said solution,

(g) recovering ferrous halide, water and hydrogen halide mixture from the ferric halide-depleted mixture,

(h) recirculating and heating the ferrous halide, water, hydrogen halide mixture for the conduct of step (a),

(i) thermally decomposing the extracted ferric halide at a temperature of about 300° C. to produce ferrous halide and the respective halogen, said ferrous halide being added to the heated ferrous halide, water, hydrogen halide mixture being recirculated,

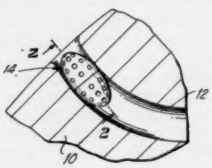
(j) reacting the halogen with water and magnesium hydroxide in the presence of a catalyst for decomposition of the water and

(k) recovering and collecting oxygen gas produced thereby.

3,842,165
MANUFACTURE OF GRAPHITE BODIES FROM HIGH SULFUR COKE
Lloyd I. Grindstaff, Elizabethton, Tenn., and Mack P. Whittaker, Stamford, Conn., assignors to Great Lakes Carbon Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 135,726, Apr. 20, 1971. This application Feb. 26, 1973, Ser. No. 335,996
Int. Cl. C01b *31/04*
U.S. Cl. 423—448 **10 Claims**

1. In a method for the manufacture of graphite bodies from an early puffing needle-type coke which comprises admixing the coke with a pitch binder, mechanically forming the body, and carbonizing and graphitizing the formed bodies, the improvement which consists of combining into a mixture in an amount of from about 5 to 67 percent of the early puffing needle-type coke with a regular puffing needle type coke and an effective amount of a puffing inhibitor to prevent puffing of said body during graphitization.

3,842,166
METHOD AND DEVICE FOR TESTING FOR THE PRESENCE OF MICRO-ORGANISMS
Louis Bucalo, Holbrook, N.Y., assignor to Microbyx Corporation, New York, N.Y.
Filed Feb 5, 1973, Ser. No. 329,862
Int. Cl. G01n *31/00*
U.S. Cl. 424—9 **6 Claims**



1. In a method of testing for the presence of micro-organisms in a living being, the steps of introducing a culture medium, which is exposed and carried by a carrier means, into a cavity of the living being where the presence of micro-organisms is suspected, leaving the culture medium in the body cavity for a time sufficient for the suspected micro-organism to grow at the culture medium and under the same conditions as those which prevail in the body cavity, removing the carrier means with the culture medium from the body cavity and then examining the removed culture medium to determine whether or not micro-organisms are present.

3,842,167
TOOTHPASTE
Max Block, Surbiton, and Charles Andrew Watson, Ruislip, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Oct. 20, 1972, Ser. No. 299,578
Claims priority, application Great Britain, Oct. 22, 1971, 49,321/71
Int. Cl. A61k *7/16*
U.S. Cl. 424—49 **2 Claims**

1. A visually clear dentifrice consisting essentially of

(a) about 5% to about 30% by weight of a solid phase comprising a particulate abrasive material having a refractive index of about 1.44 to 1.48 and an average particle size of 1 to 65 microns; and

(b) a liquid phase of substantially the same refractive index as the solid phase and comprising

(i) at least about 25% by weight of the liquid phase of a liquid humectant material selected from the group consisting of glycerine and sorbitol syrup; and

(ii) an aqueous solution of maltodextrins containing about 50% to about 70% by weight of maltodextrins, the amount of maltodextrins being at least about 10% by weight of the liquid phase of the dentifrice.

3,842,168

METHOD OF PREPARING STABLE DENTIFRICE

Daniel Colodney, Green Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 126,922, Mar. 22, 1971. This application Jan. 15, 1973, Ser. No. 323,668

Int. Cl. A61k *7/16*

U.S. Cl. 424—52 **9 Claims**

1. A method of preparing a stable dentifrice comprising adding a water-soluble non-toxic acid addition salt of 1,6-di-(p-chlorophenyl biguanido)hexane in amounts of about 0.01–5% by weight of the free base thereof and water to a non-aqueous blend of about 0.2–10% by weight of an alkali metal carboxymethyl cellulose and a humectant, then adding a surface-active agent to form a gel and then adding to said gel a dentally acceptable water-insoluble polishing material; said percentages being based on said dentifrice composition.

3,842,169

COMPOSITION AND METHOD FOR TREATMENT OF PATHOLOGICAL CALCIFICATION IN ANIMALS

Herbert D. Schneyer, Our Lane, Stevenson, Md. 21153

No Drawing. Continuation-in-part of application Ser. No. 72,216, Sept. 14, 1970, now Patent No. 3,709,989, which is a continuation of application Ser. No. 871,666, Nov. 10, 1969, which is a continuation of application Ser. No. 586,947, Oct. 17, 1969, both now abandoned, which is a continuation-in-part of application Ser. No. 318,779, Oct. 22, 1963, now Patent No. 3,279,997, which is a continuation-in-part of application Ser. No. 124,305, July 10, 1961, which in turn is a continuation-in-part of application Ser. No. 836,174, Aug. 26, 1959, both now abandoned. This application Jan. 5, 1973, Ser. No. 321,395

The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—232 **6 Claims**

1. A method for treating animals for pathological calcification and preventing the formation thereof comprising administering daily to said animals a medication comprising, in combination, from 65 parts to 972 parts by weight enteric coated calcium lactate, from 16 parts to 194 parts by weight enteric coated aspirin, from 10 parts to 60 parts by weight thiamine hydrochloride, and from 10 parts to 60 parts by weight of an antihistamine.

3,842,170

SOLUBILIZED ASPIRIN

Louis Anthony Luzzi, Clyde Weydell Whitworth, and Hung Won Jun, Athens, Ga., assignors to Research Corporation, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,716

Int. Cl. A61k *27/00*

U.S. Cl. 424—234 **7 Claims**

1. A stabilized aspirin composition which comprises the admixture of from 60 to 0.1 percent by weight acetylsalicylic acid and from 40 to 99.9 percent by weight of a blocked polyhydric alcohol wherein said polyhydric alcohol is selected from the group consisting of polyethylene glycol, polypropylene glycol, polybutylene glycol, polyisobutylene glycol, polyamylene glycol, poly(1,3)propanediol, poly(1,4) butanediol, poly(1,3)isobutylenediol, poly (1,5)-pentanediol, poly(1,4)-pentanediol, poly(1,3)-pentanediol, poly(1,6) - hexanediol, poly(1,5) - hexanediol, poly(1,4)-hexanediol, poly(1,3)-hexanediol. ethylene glycol, propylene glycol, 1,3-propanediol, butylene glycol, isobutylene glycol, 1,4-butanediol, amylene glycol, isoamylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,2-hexanediol, 1,3-hexanediol, 1,4-hexanediol, 1,5-hexanediol, 1,6-hexanediol, glycerine, 1,2,3-butanetriol, 1,2,4-butanetriol, 1,2,3-pentanetriol, 1,2,4-pentanetriol, 1,2,5-pentanetriol, 1,2,3-hexanetriol, 1,2,4-hexanetriol, 1,2,5 - hexanetriol, 1,2,6-hexanetriol, 1,3,4-hexanetriol, 1,3,5 - hexanetriol and 1,3,6-hexanetriol, and wherein said blocking group is selected from the group consisting of formyl, acetyl, prot-butoxy, phenoxy, tolyloxy, xylyloxy, 1-naphthoxy, 2-naphthoyl, phenylacetyl, phenyl-3-propionyl, phenyl-4-butyryl, methoxy, ethoxy, propoxy, isopropoxy, butoxy, t-butoxy, phenoxy, tolyloxy, xyloxy, 1-naphthoxy, 2-naphthoxy, phenylmethoxy, phenylethoxy, phenyl-3-propoxy, phenyl-2-propoxy, phenyl-2-butoxy, wherein at least one of the protons of the OH groups of the polyhydric alcohol is replaced with said blocking group, such that transesterification between said polyhydric alcohol and said acetylsalicyclic acid is hindered.

3,842,171

METHOD OF COMBATING FILARIASIS IN DOGS

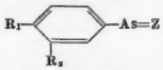
Ernst Albert Hermann Friedheim, 5 Avenue Marc Monnier, Geneva, Switzerland

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,843

Int. Cl. A61k *27/00*

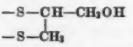
U.S. Cl. 424—245 **6 Claims**

1. A method of combating filariasis due to *D. immitis* in dogs, comprising orally administering to an infected dog a pharmaceutically effective amount of a compound of the formula I

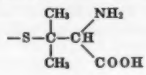


I

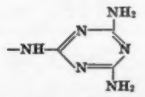
wherein Z is oxygen or a group of the formula



or Z represents two groups of the formula



R_1 is



and R_2 is hydrogen, $—NH_2$ or $—NH·CO·CH_3$.

3,842,172

PHARMACEUTICAL COMPOSITIONS CONTAINING A 4 - SUBSTITUTED - 2 - (3 - PYRIDYL) THIAZOLE AND METHODS OF USING SAME

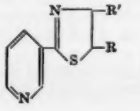
Zaven S. Ariyan, Middleroad, Conn., and William A. Harrison, Guelph, Ontario, Canada, assignors to Uniroyal, Inc., New York, N.Y., and Uniroyal Ltd., Montreal, Quebec, Canada

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,503

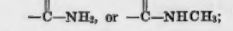
Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **24 Claims**

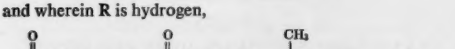
1. A method of preventing or inhibiting aggressive behavior in an animal subject characterized by the exhibition of aggressive behavior, said method comprising administering to an animal subject a thiazole compound [selected from the group consisting of compounds] of the formula:



formula wherein R' is methyl,



and wherein R is hydrogen,



or a pharmaceutically acceptable acid addition salt thereof, said thiazole compound or salt being administered in an amount which is effective to prevent or inhibit aggressive behavior in an animal subject.

3,842,173

PHARMACEUTCAL COMPOSITIONS AND METHODS OF INHIBITING GASTRIC ACID SECRETION

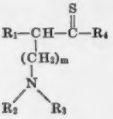
Martin Brenner, Upper Darby, and Bernard Loev, Broomall, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 236,593, Mar. 21, 1972, now Patent No. 3,740,409. This application Mar. 30, 1973, Ser. No. 346,489

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **10 Claims**

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form comprising a pharmaceutical carrier and a gastric acid secretion inhibiting amount of a thioacetamide compound of the formula:

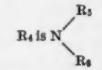


in which:

m is 0 or 1;

R_1 is a 2-pyridyl ring, said ring being optionally substituted by halogen, lower alkyl or lower alkoxy;

R_2 and R_3 are lower alkyl or taken together with the nitrogen atom to which they are attached form a piperidino, pyrrolidino or N-lower alkylpiperazino ring;



or NH-$(CH_2)_n$-cycloalkyl, said cycloalkyl having 3–6 carbon atoms;

R_5 and R_6 are hydrogen or lower alkyl and

n is 0 or 1

or a pharmaceutically acceptable acid addition salt thereof.

3,842,174

SUBSTITUTED NITROIMIDAZOLYLTHIADIAZOLES AND OXADIAZOLES AS ANTIPROTOZOAL AGENTS

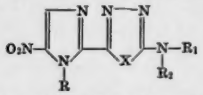
Gerald Berkelhammer, Princeton, and Goro Asato, Titusville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Jan. 12, 1972, Ser. No. 217,709, now Patent No. 3,740,434, which is a division of application Ser. No. 30,944, Apr. 22, 1970, now Patent No. 3,666,860, which is a continuation-in-part of abandoned application Ser. No. 814,160, Apr. 7, 1969, which is a continuation of application Ser. No. 659,596, Aug. 10, 1967, now Patent No. 3,452,035, which in turn is a continuation-in-part of abandoned application Ser. No. 604,158, Dec. 23, 1966. Divided and this application Mar. 5, 1973, Ser. No. 338,129

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **4 Claims**

1. A method of inhibiting the growth of protozoa in warm-blooded animals which comprises administering orally or parenterally to said animals an antiprotozoally effectve amount of a nitroamidazole of the formula:



wherein R is selected from the group consisting of lower alkyl, hydroxy lower alkyl, lower alkanoyloxy lower alkyl and benzyl; X is selected from the group consisting of oxygen and sulfur; and

taken together is selected from the group consisting of 1-imidazolyl and 1-pyrrolidinyl, or physiologically acceptable salts thereof.

3,842,175

N-TRITYLIMIDAZOLES AS ANTIFUNGAL AGENTS

Erik K. Regel, Wuppertal-Kronenberg, Karl-Heinz Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

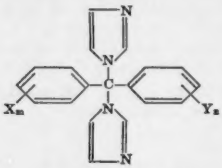
No Drawing. Application Oct. 8, 1971, Ser. No. 187,814, which is a division of application Ser. No. 873,098, Oct. 31, 1969. Divided and this application June 22, 1973, Ser. No. 372,806

Claims priority, application Germany, Nov. 5, 1968, P 18 06 995.9

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **23 Claims**

1. A pharmaceutical composition useful for treating fungal infections pathogenic to humans or animals which comprises an antifungal amount of a compound of the formula



wherein

R^1 is hydrogen or alkyl of 1 to 4 carbon atoms;

m is 2 and *n* is 0 and one X is fluorine, chlorine, bromine or iodine and other X is NO_2, CN, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, thiomethyl or CF_3; or

m is 1 and *n* is 1 and X is fluorine, chlorine, bromine, or iodine and Y is NO_2, CN, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, thiomethyl or CF_3;

or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,842,176

N-TRITYLIMIDAZOLES AS ANTIFUNGAL AGENTS

Erik K. Regel, Wuppertal-Kronenberg, Karl-Heinz Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Oct. 8, 1971, Ser. No. 187,814, which is a division of application Ser. No. 873,098, Oct. 31, 1969. Divided and this application June 22, 1973, Ser. No. 372,814

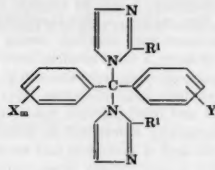
Claims priority, application Germany, Nov. 5, 1968, P 18 06 995.9

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **25 Claims**

1. A pharmaceutical composition useful for treating fungal infections pathogenic to humans or animals which

comprises an antifungal amount of a compound of the formula



wherein

R^1 is hydrogen or alkyl of 1 to 4 carbon atoms;
X and Y are NO_2; and
m is 0, 1 or 2 and *n* is 1 or 2; or
m is 1 or 2 and *n* is 0, 1 or 2;

or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,842,177

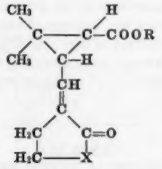
CERTAIN CYCLOPROPANE CARBOXYLIC ACID ESTERS AS INSECTICIDES

Jacques Martel, Bondy, and Jean Buendia, Bois, France, assignors to Roussel-UCLAF, Paris, France

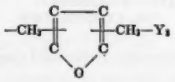
No Drawing. Continuation-in-part of abandoned application Ser. No. 306,404, Nov. 14, 1972, which is a division of application Ser. No. 48,488, June 22, 1970, now Patent No. 3,714,153. This application Feb. 5, 1973, Ser. No. 329,847

Int. Cl. A01n *9/12, 9/22, 9/24*
U.S. Cl. 424—274 **14 Claims**

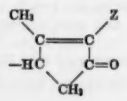
1. An insecticidal composition comprising an insecticidally effective amount of a compound selected from the group consisting of optically active and racemic mixtures of a compound of the formula



wherein X is selected from the group consisting of oxygen and sulfur and R is selected from the group consisting of alkyl of 1 to 6 carbon atoms, a radical of the formula



wherein Y_3 is phenyl, and a radical of the formula



wherein Z is selected from the group consisting of alkenyl of 2 to 7 carbon atoms and alkadienyl of 4 to 7 carbon atoms; and an inert carrier.

3,842,178

XANTHENYL SEMICARBAZIDES AS GASTRIC ANTISECRETORY AGENTS

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

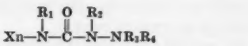
No Drawing. Application Sept. 15, 1969, Ser. No. 858,183, now Patent No. 3,686,218, which is a continuation-in-part of application Ser. No. 662,987, Aug. 23, 1967, now Patent No. 3,644,420. Divided and this application Aug. 2, 1972, Ser. No. 277,410

Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67; Sept. 27, 1968, 46,085/68

Int. Cl. A61k *27/00*
U.S. Cl. 424—283 **13 Claims**

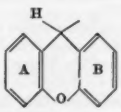
1. A therapeutic composition which comprises an antisecretory effective amount of an active ingredient selected from the group consisting of

(a) a compound of Formula I



I

wherein X*n* represents the group



in which the rings A and B optionally contain substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy and hydroxy;
R_1 is a hydrogen lower alkyl of lower alkenyl;
R_2 is hydrogen or lower alkyl;
R_3 is hydrogen or lower alkyl;
R_4 is hydrogen or lower alkyl;
(b) a pharmaceutically acceptable acid addition salt of a compound of Formula I; and
(c) when R_3 and R_4 are each lower alkyl, a pharmaceutically acceptable quaternary salt of a compound of Formula I;

and a pharmaceutically acceptable excipient, said composition being suitable for oral, rectal or parenteral administration.

3,842,179

ANTI-MICROBIAL DIARALKYLAMINOALKYL ETHERS AND PROCESS FOR PROTECTING PLANTS

Carl Bordenca, Ponte Vedra Beach, Fla., and Kenneth P. Dorschner, Vienna, Va., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 123,424, Mar. 11, 1971. This application Nov. 27, 1972, Ser. No. 309,722

Int. Cl. A01n *9/20*
U.S Cl. 424—330 **7 Claims**

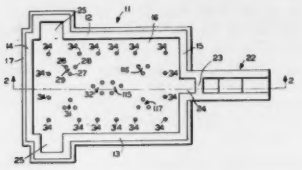
1. A composition for protecting a growing plant from attack by pathogenic fungi, said composition comprising an agriculturally acceptable dilution assistant and an effective fungicidal amount of about 0.5 to 99.5% of N-[2-(3,7-dimethyloctyloxy)ethyl] dibenzylamine or N-[2-(n-decyloxy)ethyl] dibenzylamine.

ELECTRICAL

3,842,180
APPARATUS AND METHOD FOR STARTING AN ELECTRIC GLASS MELTING FURNACE

Magnus L. Froberg, Granville, and John F. Maddux, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 21, 1974, Ser. No. 435,043
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **43 Claims**



1. An electric furnace for resistive heating of molten glass, comprising:

a chamber for containing glass constituents;

a source of alternating current;

first and second electrodes positioned within said chamber a first distance apart and adapted to engae the constituents to define therein relatively short electrical current paths therebetween;

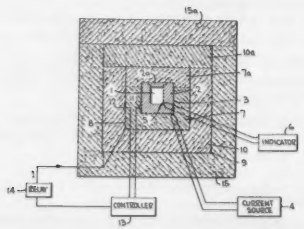
a third electrode positioned within said chamber a second distance greater than said first distance from said first electrode and adapted to engage the constituents to define therein relatively long electrical current paths between said first and third electrodes;

switching means for connecting said current source selectively between said first and second electrodes and between said first and third electrodes.

3,842,181
FURNACE

Fokke Cornelius Dijkstra, Maastricht; Theodorus Maria Groothuizen, Schipluizen; Hermanus Johannes Pasman, Wassenaar, and Tonny Van de Putte, De Lier, all of Netherlands, assignors to Nederlandse Organisatie Voor Togepast-Natuurweten-Schappelijk Onderzoek Ten Behoeve Van De Rijksverdediging, The Hague, Netherlands

Filed Aug. 1, 1973, Ser. No. 384,569
Claims priority, application Netherlands, Aug. 2, 1972, 7210578
Int. Cl. F27b *5/08;* **F27d** *11/02*
U.S. Cl. 13—22 **1 Claim**

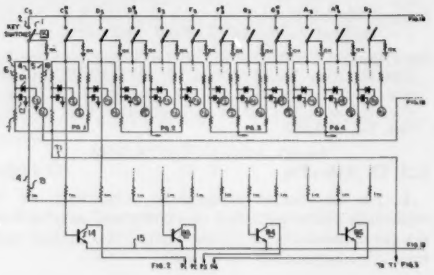


1. A furnace, comprising, a hollow metal housing for containing a sample in its cavity, a first electric heating mantle surrounding said housing, a second electric heating mantle surrounding said first mantle, a heat-insulating intermediate layer disposed between said mantles, means for regulating flow of heat in said layer, a third electric heating mantle having an external heat insulating layer thereon surrounding said second mantle, another heat-insulating layer disposed between said second and third mantles, said second and third mantles being electrically connected in series, wherein the power excitable per unit of surface in said second mantle and in said third mantle is substantially equal, means for controlling the flow of heat in said intermediate layer, each such power being controlled by said control means, and the supply voltage of said first mantle being independent of the supply voltage of the series connection.

3,842,182
ARPEGGIO SYSTEM

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Oct. 17, 1972, Ser. No. 298,246
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.03 **23 Claims**



1. An arpeggio generator for an electronic organ, comprising an array of at least two octaves of keys, means responsive to simultaneous actuation of any plurality of said keys from **2** to **5** for calling forth tones corresponding with all said plurality of said keys sequentially in an arpeggio sequence of equal time intervals.

3,842,183
ELECTRONIC MUSICAL INSTRUMENT PROVIDED WITH DEVICES FOR INDICATING PRESET STATE OF RESPECTIVE VOICES

Eiichiro Aoki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Nov. 29, 1973, Ser. No. 420,322
Claims priority, application Japan, Nov. 30, 1972, 47-120035; Nov. 30, 1972, 47-120036
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.12 **5 Claims**

1. An electronic musical instrument comprising:

tone generators:

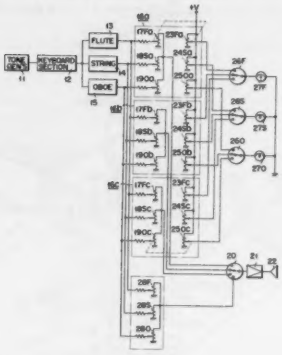
keyboard means for selectively keying tone signals generated by said tone generators;

a plurality of tone coloring filters each connected to receive the tone signals from said keyboard means;

a plurality of pre-setting units each connected to the output sides of each of said tone coloring filters, each of said pre-setting units including a plurality of means equal in number to the number of said filters one connected to

receive musical tone signals from each of said tone coloring filters respectively to preset and mix the amplitude levels of each of the musical tone signals;

means for generating signals proportional to each of the preset amplitudes of said musical tone signals;



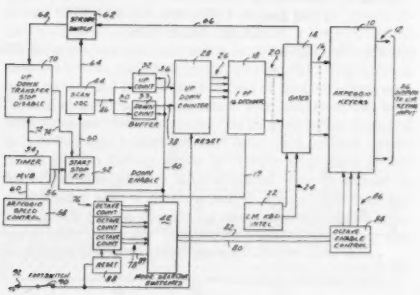
visual indicating means equal in number to the number of said filters; and

switching means connected to selectively energize said indicating means with a desired one of said signals proportional to the preset amplitudes of said musical tone signals.

3,842,184
MUSICAL INSTRUMENT HAVING AUTOMATIC ARPEGGIO SYSTEM

Alberto E. Kniepkamp, Arlington Heights, and William Wangard, Maywood, both of Ill., assignors to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed May 7, 1973, Ser. No. 358,164
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.01 **19 Claims**



1. A musical instrument comprising:

a. generator means for producing a series of signals corresponding to a plurality of musical tones;

b. a keyboard;

c. a set of key-operable switches operable by the keys of said keyboard;

d. a series of control gates for selectively interconnecting the key-operable switches in circuit with said generator means for producing tones in response to operation of said gates;

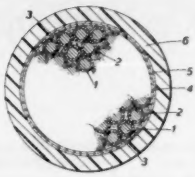
e. scanning means for sequentially scanning said key-operable switches and for operating said control gates in response to operated ones of said key-operable switches; and

f. control means connected with said scanning means for successively halting the operating of said scanning means at operated ones of said key operated switches.

3,842,185
ALUMINIUM ALLOY CONDUCTOR WIRE

Peter Michael Raw, Harrow, and Rees Jenkin Llewellyn, Twickenham, both of England, assignors to British Insulated Callenders Cables Limited

Filed Nov. 30, 1973, Ser. No. 420,592
Claims priority, application Great Britain, Aug. 9, 1973, 37870/73
Int. Cl. H01b *1/02*
U.S. Cl. 174—23 R **11 Claims**

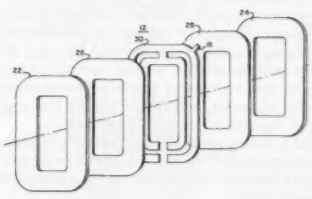


1. A conductor wire composed of an aluminium alloy consisting of between 98.0 and 99.5 weight percent aluminium; between 0.3 and 1.0 weight percent iron; between 0.08 and 1.0 weight percent copper; a maximum of 0.15 weight percent silicon; and trace quantities of conventional impurities.

3,842,186
STATIC PLATE FOR POWER TRANSFORMERS

Gary M. Hall, Farmland, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 23, 1973, Ser. No. 408,960
Int. Cl. H05k *9/00*
U.S. Cl. 174—35 CE **9 Claims**



1. A static plate for electrical inductive apparatus, comprising:

first and second relatively rigid insulating members;

first and second relatively flexible insulating members each having first and second sides;

an electrically couductive member having first and second sides;

the first side of said conductive member being tightly bonded to the first side of said first flexible insulating member by an adhesive;

the second side of said conductive member being tightly bonded to the first side of said second flexible insulating member by an adhesive;

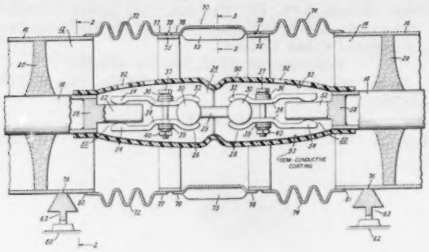
the second side of said first flexible insulating member being relatively loosely bonded to the first rigid insulating member; and

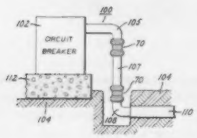
the second side of said second flexible insulating member being relatively loosely bonded to the second rigid insulating member.

3,842,187
ELECTRIC BUS WITH JOINT FOR ACCOMMODATING EARTHQUAKE-PRODUCED MOTION OF PARTS

Philip Barkan, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 28, 1973, Ser. No. 419,849
Int. Cl. H02g *15/24, 5/00*
U.S. Cl. 174—38 **6 Claims**





1. An electric bus section comprising:

a. a pair of adjacent bus portions, each comprising a tubular metal sheath and a conductor within said sheath extending longitudinally of said sheath in spaced, electrically-insulated relationship with respect to said sheath,

b. a current-carrying joint electrically connecting said conductors in series and comprising:

i. two current-carrying ball and socket connections electrically connected in series with each other, each comprising a conductive ball part, a conductive socket part defining a socket receiving said ball part in a manner that permits relative angular movement between said parts, said conductive socket part comprising a plurality of segments, and means biasing said segments into firm engagement with said ball part,

ii. and a sliding connection electrically in series with said ball and socket connections for allowing relative movement between said conductors in a direction longitudinally thereof,

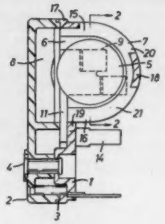
c. a tubular enclosure for said joint radially spaced therefrom, and means providing a seal between the respective opposite ends of said enclosure and said tubular sheaths, said enclosure being constructed to allow for axial, transverse, and rotational movement of said sheaths with respect to each other.

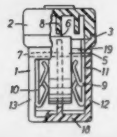
3,842,188
DEVICE FOR HOLDING AND CONTACTING THERMALLY LOADED CERAMIC RESISTORS IN A CASE

Poul Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 12, 1973, Ser. No. 415,119
Claims priority, application Germany, Nov. 14, 1972, 2255664
Int. Cl. H01c *1/02, 1/08*
U.S. Cl. 174—52 R **1 Claim**

1. A device for holding and contacting a thermally loaded disc shaped ceramic resistor comprising a casing having first and second parts, means fastening said parts together, said first casing part having a U-shaped rib straddled by U-shaped end walls, web means connecting said end walls and said U-shaped rib, said second casing part having a rectangularly



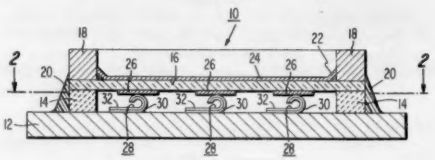


shaped rib aligned with said U-shaped rib to form a resistor cavity therebetween, and a pair of resilient electrical contacts disposed on opposite sides of said cavity for resiliently engaging the opposite sides of a resistor when disposed in said cavity and for resiliently engaging said end walls.

3,842,189
CONTACT ARRAY AND METHOD OF MAKING THE SAME

Peter David Southgate, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,801
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 S **5 Claims**



1. An electrical device comprising

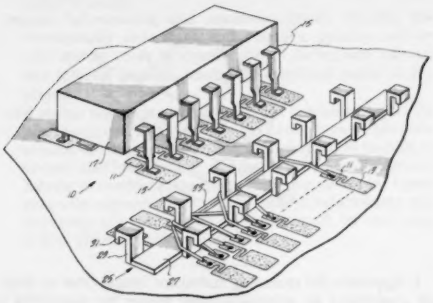
a substrate, and

a contact on a surface of said substrate, said contact including two superimposed metal films and having a first end portion extending along and attached to said surface of the substrate and a second end portion projecting from and out of the plane of said surface to engage another device, at least one of said metal films being of a metal having internal stresses which causes the second end portion to curl away from the surface of the substrate.

3,842,190
WIRE ROUTING SYSTEM

LeRoy Dean Towell, Dallas, Tex., assignor to Computer Industries, Inc., Sherman Oaks, Calif.

Division of Ser. No. 885,025, Dec. 15, 1969, Pat. No. 3,643,133. This application Sept. 22, 1971, Ser. No. 182,916
Int. Cl. H05k *1/02, 3/32*
U.S. Cl. 174—68.5 4 Claims



1. A wire routing printed circuit board for use with an NC reflow wiring machine having a capillary which is adapted to handle, locate and reflow solder insulated wire to selected areas and to support electronic components, said circuit board comprising:

a printed circuit board base having at least one group of wire land areas printed on the one side thereof for providing electrical connections with portions of said insulated wire, said group of wire land areas being aligned in a single longitudinal row and having a quantity of electrically conductive solder material mounted on each wire land area;

a plurality of integrated circuit pads having a quantity of electrically conductive solder material mounted on each pad and located on said base for receiving the terminal legs of a plurality of electronic components, said integrated circuit pads comprising at least a pair of longitudinal rows of integrated circuit pads with a respective row of integrated circuit pads being on either side of said wire land area row, each integrated circuit pad being electrically connected to a respective one of said wire land area located in said single longitudinal wire land row, said wire land areas and said integrated circuit pads being arranged in a coordinate system on said base, said printed circuit board further having space to receive alignment means for aligning lengths of said insulated wire to extend in accordance with a predetermined design between said wire land areas to provide a known and repeatable insulated wire route for facilitating the programming and inspection of the finished circuit.

3,842,191
INSULATED WIRE SPLICE

Dory J. Neale, Sr., St. Petersburg, Fla., assignor to The National Telephone Supply Company, Cleveland, Ohio

Filed Dec. 17, 1973, Ser. No. 425,508
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 R 8 Claims

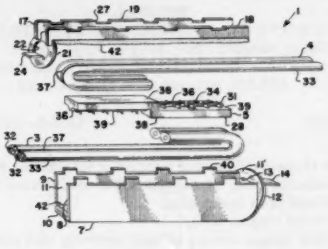
1. An electrical wire splice comprising:

a. a body member having spaced apart side walls and a web therebetween and having opposed ends with openings sized for receiving a wire therethrough;

b. a clamp member disposed between said wall walls being movable toward said web;

c. an anchor member received between said member having opposite ends adjacent the opposite ends of said body and having conductor means cooperating therewith;

d. wire members each extending through a respective one of said body openings and reversely bent around a respective end of said anchor member with said wires electri-



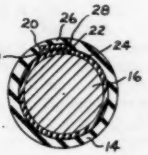
cally engaging said conductor means effecting electrical continuity therebetween;

e. cooperating means on said body and said clamp member holding the same in clamping engagement with said wires and said anchor member and holding said wires in electrical contact with said conductor means.

3,842,192
DUAL INSULATED MAGNET WIRE

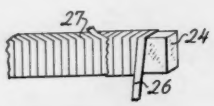
George D. Hilker; Charles E. Doehrman; Verne H. Lausen; Harold P. Mowery, and Mike T. Sutton, all of Fort Wayne, Ind., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed May 17, 1973, Ser. No. 361,121
Int. Cl. H01b *7/02*
U.S. Cl. 174—120 SR 9 Claims



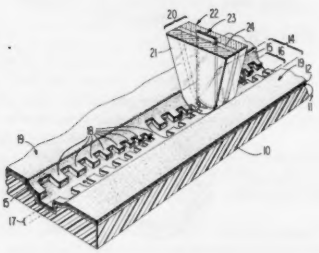
1. A dual coated magnet wire having surprising thermal characteristics, improved abrasion resistance and slip properties, improved moisture resistance, and improved electrical insulating value comprising an elongated magnet wire conductor, an elongated strip of insulating material, said strip extending longitudinally of said conductor and being tightly wrapped around said conductor to overlap longitudinally extending portions of said strip adjacent the opposite peripheral edges thereof and to exclude air therefrom thereby forming a base insulation, an adhesive only between said overlapped portions, and a layer of resinous material superimposed on said base insulation forming an overcoat thereon, said insulated conductor being able to withstand temperatures in windings for short times greatly in excess of the temperature at which said resin material loses its strength without said strip unwrapping.

3,842,193
GLASS INSULATED MAGNET WIRE
Daniel B. Johnson, Muskegon, Mich., assignor to The Anaconda Company, New York, N.Y.
Filed July 6, 1973, Ser. No. 377,163
Int. Cl. H01b 7/02
U.S. Cl. 174—120 C **2 Claims**



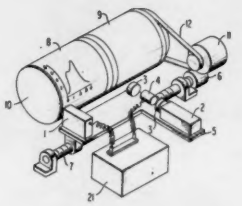
1. An elongated insulated conductor for winding into coils, said conductor being of a length sufficient for winding a plurality of said coils comprising:
A. a metal magnet wire,
B. a first helical serving of tape covering said wire and in contact therewith with a preselected direction of lay, and
C. a second serving of tape directly covering said first serving with a direction of lay opposite to said direction of lay of said first serving,
D. said tape comprising a plurality of continuous glass fibers laid parallel and free from any crossing fibers and a coating of baked insulating enamel surrounding each of said fibers and bonding said fibers together, said wire being free from enamel adherent thereto.

3,842,194
INFORMATION RECORDS AND RECORDING/PLAYBACK SYSTEMS THEREFOR
Jon Kaufmann Clemens, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 22, 1971, Ser. No. 126,772
Int. Cl. G11b 3/44, 25/04; H04n 5/76
U.S. Cl. 178—6.6 A **27 Claims**



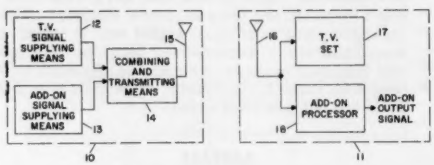
1. An information record, adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus; said record comprising:
a disc having a continuous conductive surface, and having a spiral groove in said continuous conductive surface;
said groove dimensioned for reception therein of said playback stylus and containing an information track constituted by variations in the geometry of the bottom of said groove; said groove bottom geometry variations including variations of adequate fineness of dimension to accommodate recovery of signals of said bandwidth upon establishment of said relative motion at said desired rate and a dielectric coating of substantially uniform thickness overlying said conductive surface.

3,842,195
MULTI-COLOR RECORDING METHOD AND APPARATUS THEREFOR
Tsunehiko Takahashi, and Akira Nabara, both of Asakashi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 4, 1972, Ser. No. 311,598
Claims priority, application Japan, Dec. 3, 1971, 46-97727
Int. Cl. H04n 1/46
U.S. Cl. 358—75 **6 Claims**



1. Apparatus for recording multicolor images from an original comprising an original reading means for generating a signal which varies in accordance with the colors of the original, a laser source emitting a light beam of a single wavelength, a signal converter means for converting the signal from said original reading means to a signal representing the color of the original, and light amplitude modulator means coupled to said signal converter means for amplitude modulating the laser beam stepwise to one of a plurality of intensity levels in accordance with the signal supplied from said signal converter means, a recording material which yields different colors in response to the intensity of light irradiated thereon, and means for directing the amplitude modulated laser means on said material, whereby said light beam is modulated in accordance with the colors of the original and a multicolor image is recorded on said material.

3,842,196
SYSTEM FOR TRANSMISSION OF AUXILIARY INFORMATION IN A VIDEO SPECTRUM
Bernard D. Loughlin, Centerport, N.Y., assignor to Hazeltine Research, Inc., Chicago, Ill.
Continuation of Ser. No. 302,333, Oct. 30, 1972, abandoned.
This application Nov. 12, 1973, Ser. No. 415,202
Int. Cl. H04n 7/08, 9/00
U.S. Cl. 358—12 **20 Claims**



1. A system for compatibly transmitting and receiving both a TV signal and an add-on signal within the frequency band occupied by the TV signal alone, comprising:
means for supplying a TV signal occupying a predetermined frequency band and containing video information occurring during time successive line intervals;
means for generating an add-on signal located within a portion of said frequency band lying between the normal location of the luminance and chrominance carrier frequencies, said add-on signal being of a selected polarity

during portion of alternate ones of said line intervals and of an opposite polarity during like portions of remaining line intervals, and said add-on signal containing one element of add-on information for each alternate line interval portion which is identically repeated during the remaining like line interval portion whereby said add-on signal is intentionally made redundant and of an opposite polarity during pairs of time successive line interval portions;

means for combining and transmitting both said add-on and said TV signals;

means for receiving said combined signal, whereby the intentionally redundant and opposite polarity add-on information tends to visually cancel during said pairs of line interval portions when said combined signal is displayed;

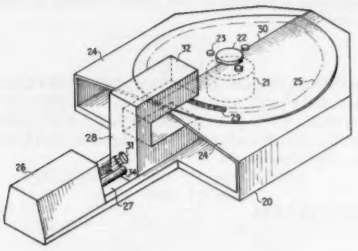
and means responsive to said received combined signal for processing said signal during pairs of line interval portions to tend to cause redundant video information therein to cancel and redundant add-on information elements therein to reinforce, thereby developing an output signal primarily representative of said add-on information and occurring at a rate of one add-on element for each pair of line interval portions employed.

3,842,197

FLEXIBLE HOLOGRAPHIC RECORD DISC REPRODUCING SYSTEM

Georges Broussaud, and Erich Spitz, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 7, 1972, Ser. No. 224,121
Claims priority, application France, Feb. 8, 1971, 71.04134
Int. Cl. H04n *5/86;* **G11b** *7/00*
U.S. Cl. 178—6.7 A **12 Claims**



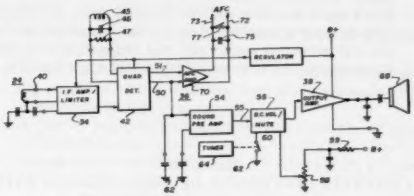
1. An electro-optical reproducing system for producing an electrical signal from a flexible record disc having two faces and carrying on at least one of said faces stored information relating to an electrical signal, said stored information being in the form of holographic print in relief occupying a circular area of said disc, said print comprising a mosaic of holograms capable of producing by diffraction of a monochromatic radiation directed thereon at least one fixed image which is contained in a plane parallel to the face of said disc opposed to said one face and comprises a track extending in the form of a spiral about a centre and forms a unidimensional distribution of radiation intensities representative of the form of said electrical signal; said reproducing system comprising: a deck in the form of a roof having two sloping faces defining a ridge extending along a line, a driving spindle extending through said deck and mounted to rotate about an axis intersecting said line of said ridge, mechanical connecting means for combining said disc with said spindle so as to be rotated by said spindle, means for rotating said disc and said spindle at constant speed relative to said deck about said axis, means for emitting a monochromatic radiation for illuminating a zone of the print of said disc located above said ridge, a diaphragm provided with an orifice, photoelectric means disposed to receive through said orifice a portion of the energy diffracted by the illuminated zone of said print, and mechanical means for displacing said diaphragm along said line of said ridge in synchronism with the rotation of said spindle, whereby the orifice of said diaphragm coincides at each instant with the axis of the spiral track projected by said disc.

3,842,198

SOUND DEMODULATOR AND AFC SYSTEM

James C. Martin, Fort Wayne, Ind., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Sept. 7, 1973, Ser. No. 395,286
Int. Cl. H04n *5/50*
U.S. Cl. 178—5.8 AF **9 Claims**



1. In a television receiver having an IF audio channel for processing an IF audio signal which is frequency modulated above and below a desired IF audio carrier center frequency the improvement comprising:

detector means responsive to said IF audio signal for deriving a wideband AFC signal and an audio output signal,

input means for coupling said IF audio signal to said detector means,

said detector means and said input means having a bandwidth extending at least 1 MHz above and 1 MHz below said desired IF audio carrier center frequency.

an AFC amplifier having a bandwidth extending at least 1 MHz above and 1 MHz below said desired IF audio carrier center frequency and coupled to said detector means for amplifying the wideband AFC signal, and

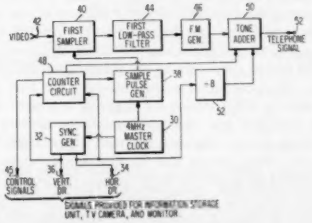
an audio amplifier coupled to said detector means for amplifying the audio output signal.

3,842,199

TELEPHONE IMAGE TRANSMISSION SYSTEM

John James Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 26, 1972, Ser. No. 257,412
Int. Cl. H04n *7/12*
U.S. Cl. 178—6.8 **8 Claims**



1. An image transmission system comprising:

first means for generating video signal information representative of an object scene scanned under the control of applied line and field rate deflection signals;

an audio frequency communications link having a predetermined bandwidth and accommodating a given signal sampling rate less than said line scanning rate;

second means coupled to an input of said communications link for generating frequency modulated signals over a range of frequencies within the bandwidth of said link;

third means for applying said video signal information into said generator means at a rate comparable to said signal sampling rate for converting successive video samples to frequency modulated audio frequency signals to be transmitted by said communications link from one location to another location; and

fourth means for receiving said sample transmissions for reproduction by an image display device, also controlled by line and field rate deflection signals;

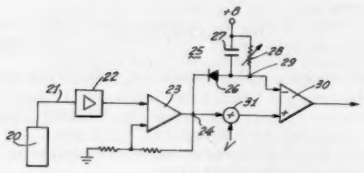
with said third means including means to reduce the rate of field control deflection signals in generating said video signal information by one-half the ratio between said given signal sampling and line scanning rates, in transmitting successive samples of said video signal information via said generator means and said audio frequency communications link from said first to said other location.

3,842,200

CONTRAST PROCESSING OF VIDEO SIGNALS WITH SELF-ADJUSTING REFERENCE

Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Oct. 19, 1972, Ser. No. 299,060
Int. Cl. H04n *1/00*
U.S. Cl. 178—7.1 **9 Claims**



1. Apparatus for quantizing video information represented by video signals as resulting from scanning a particular area which contains contrasting markings comprising:

first means connected for receiving the video signals and being responsive to the level of signal extremities having one particular direction, to sample the value thereof but gradually changing the sampled value at a controlled rate in direction opposite to the direction of the extremities independantly from the extremities directed in direction opposite to the particular direction; and

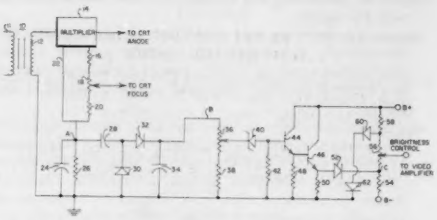
second means for receiving the video signal and the sampled and changed signal as provided by the first means and including third means for deriving a trigger signal from the sampled and changed signal, the second means including means responsive to said trigger signal as derived by the third means and further reponsive to said video signal as received for triggering production of the leading edge of a pulse when the trigger signal traverses the video signal as varying towards the respective next one of said extremities, while producing subsequently the trailing edge of that pulse when the trigger signal as updated by the sampled value by operation of the first means traverses the video signal as changing from said extremity, so as to obtain a train of pulses.

3,842,201

BEAM CURRENT LIMITER

Sanjar Ghaem-Maghami, Chesapeake, and Howard E. Holshouser, Hobson, both of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Apr. 9, 1973, Ser. No. 349,650
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 R **4 Claims**



1. In a television receiver having a video amplifier for applying video information to a cathode ray tube and voltage multiplier means to obtain an anode voltage supply for said cathode ray tube, cathode ray tube beam current limiting means comprising:

means in series circuit with the ground return path of said multiplier means for developing a voltage proportional to cathode ray tube beam current,

means for detecting the peak-to-peak amplitude of said voltage and responsive thereto to obtain a control voltage proportional to beam current, and

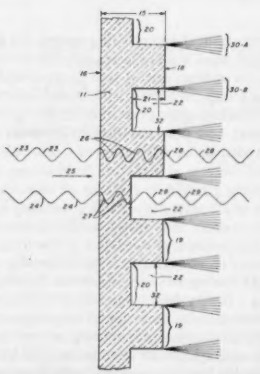
control means responsive to said control voltage when said control voltage exceeds a predetermined amplitude to control the DC reference level of said video amplifier by applying a portion of said control voltage to said video amplifier.

3,842,202

COMBINATION OF A TRANSMISSIVE DIFFRACTIVE PHASE-GRATING AND A TELEVISION PICTURE-TUBE IN OPERATIVE JUXTAPOSITION TO EACH OTHER

Edgar B. Coale, Philadelphia, Pa., assignor to Max Levy & Co., Inc., Philadelphia, Pa.

Filed Nov. 6, 1972, Ser. No. 304,200
Int. Cl. H04n *5/72*
U.S. Cl. 178—7.85 **3 Claims**



1. The below-described combination (Y) of a television picture-tube and a transmissive diffractive phase-grating (X),

X. which phase-grating comprises a parallel-sided transparent polished plate, at least one side of which is composed of two sets of alternating polished surface-portions, the surface-portions of each set being generally uniformly spaced apart and co-planar with each other and being of generally equal areas, and the surface portions of one set alternating with the surface-portion of the other set in generally uniform array, and the co-planar surface-portions of one set being offset with respect to the co-planar surface-portions of the other set, with the common plane of the one set being parallel with the common plane of the other set, and the thickness of the plate in the areas of one set and the thickness of the plate in the areas of the other set differing by about 6100 Angstrom units, whereby substantially all transmission of the zeroth-order of generally all frequencies of visible light is nulled and diverted and distributed into pairs of diffractive first-order spectral images each containing close to one-half of the energy of the so nulled zeroth-order of light,

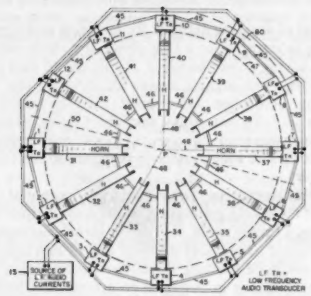
Y. in which combination the phase-grating is operatively juxtaposed to the face of the picture-tube, with the alternating surface-portions of the grating oriented in relation to the picture-particulating matrix of the picture-tube and at such distance from the phosphor portions thereof that the two first order diffractive spectral images of the particulated information-areas on the picture-surface of the tube will be substantially spaced from each other without overlap.

3,842,203

PUBLIC ADDRESS SYSTEM WITH HORN SPEAKERS ARRAYED AROUND AND FACING INWARD TOWARD A COMMON POINT

Jack Weisberg, 450 Broome St., New York, N.Y. 10013

Filed June 30, 1972, Ser. No. 268,032
Int. Cl. H04r *27/00*
U.S. Cl. 179—1 AT **25 Claims**



1. A loudspeaker system for evenly distributing sound over a wide angle, outdoors or in a large hall, and with a frequency transmission band including sound of wave lengths greater than the overall apparatus dimensions, comprising:

a multiplicity of speaker transducer units each equipped with a horn flared in at least one dimension and connected to respond to a common electrical exciting signal and arranged to direct their principal sound output towards a common point around which they are disposed in a substantially horizontal arc, of at least 150°, sufficiently surrounding said point to produce a pulsating sound core in the space between the mouths of said horns and said point; and

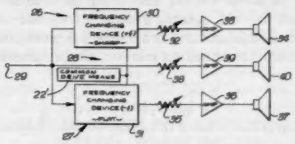
channel means between and around said speaker transducer units and their horns, constituted by means providing spaces therebetween and therearound, for evenly spreading out sound waves over a wide angle in a large volume of space to the rear of said speaker transducer units.

3,842,204

PULSATO GENERATION SYSTEM

Donald J. Leslie, 1561 Gaywood Dr., Altadena, Calif. 91001

Filed Aug. 16, 1972, Ser. No. 280,997
Int. Cl. H04r *3/00*
U.S. Cl. 179—1 J **9 Claims**



1. In a pulsato generation system for use with an electrical musical instrument:

a. circuit means forming an electrical output channel deriving electrical signals from said instrument corresponding to all notes in a musical range;

b. a pair of separate frequency shift channel means each connected to said circuit means so that the same musical information is applied to each frequency shift channel means;

c. one of said frequency shift channel means including means shifting said signals upwardly in frequency and further including a speaker for translating said signals into sound;

d. the other of said frequency shift channel means including means shifting said signals downwardly in frequency and further including a speaker for translating said signals into sound;

e. the acoustic interaction of the sounds produced by said speakers producing pulsato by virtue of the frequency shift of the signals;

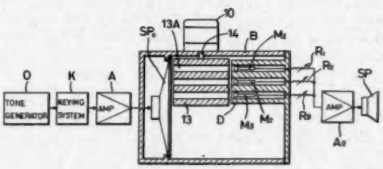
f. the frequency shift in each of said frequency shift channels being substantially equal whereby a single, true pitch, pulsato sound is perceived by the listener.

3,842,205

TREMOLO EFFECT PRODUCING ACOUSTIC FILTER SYSTEM

Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed July 16, 1973, Ser. No. 379,317
Claims priority, application Japan, July 18, 1972, 47-84573; July 20, 1972, 47-85492
Int. Cl. H04r *1/02, 1/20*
U.S. Cl. 179—1 J **8 Claims**



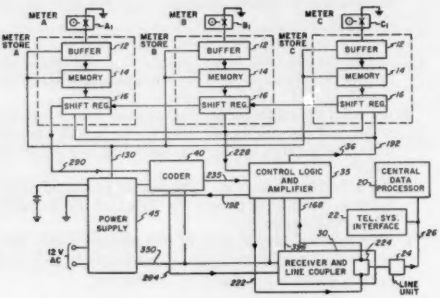
1. A tremolo effect producing acoustic filter system comprising: a closed housing, said housing including therein an electro-acoustic transducer having a sound radiating surface and capable of radiating sounds having a desired frequency band, a plurality of acousto-electric transducers for picking up the sounds radiated from said electro-acoustic transducer and converting the sounds into electric signals, said plurality of transducers being juxtaposed and acoustically isolated from each other and opposed to the sound radiating surface of said

electro-acoustic transducer at different positions thereof, and a rotary sound interrupting member disposed relatively closely between said sound radiating surface of the electro-acoustic transducer and said plurality of the acousto-electric transducers, said rotary sound interrupting member periodically interrupting, in accordance with the revolution thereof, sound paths leading from said electro-acoustic transducer to said plurality of acousto-electric transducers, so as to provide fade-in and fade-out effects and different frequency band characteristics for the sounds picked up by the respective acousto-electric transducers; and means for giving rotation to said rotary sound interrupting member at a required speed.

3,842,206
TRANSPONDER FOR METER READING TELEMETERING SYSTEM

John Anthony Barsellotti; Federico Riccardo Laliccia, and John Fraser Litster, all of Guelph, Ontario, Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 308,973
Claims priority, application Canada, Dec. 16, 1971, 130329
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 A **7 Claims**



1. A telemetering transponder for transmitting data to a trunk line, said transponder comprising: means operable by a meter for providing periodic monitoring signals indicative of periodic changes in the meter reading, continuously active memory means responsive to said signals for storing a a continuously up-dated indication of the reading of said meter, means responsive to an initiating signal received over said trunk line for enabling the non-destructive read-out of said stored indication from said memory means to a temporary storage means, said temporary storage means normally inactive and activated responsive to said initiating signal, encoding means, said encoding means activated by and responsive to said initiating signal to read-out data stored in said temporary storage means and to code said data into a message comprised of a predetermined number of bits representative of said stored indication, means for transmitting said message from said encoding means to said trunk line as a series of pulsed bits and means responsive to the end of transmission of the predetermined number of bits of said message for terminating the activation of said temporary storage means, said encoding means and said read-out means.

3,842,207
DATA SET CONTROL LOGIC

Richard D. Fretwell, Grove City, Ohio, assignor to MI², Incorporated, Columbus, Ohio

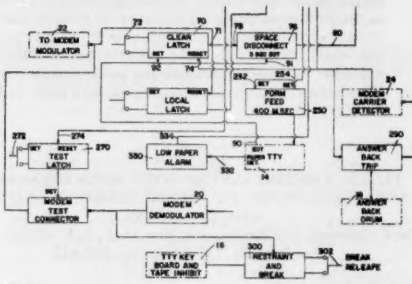
Filed Feb. 27, 1973, Ser. No. 336,278
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **10 Claims**

1. A control logic circuit for a modem of the type connected to a direct access arrangement including RI, DT, DR, DA and OH terminals, the modem having a modulator, a demodulator and a carrier detector for shifting from a first to a second output level when a carrier is received, the logic circuit comprising:

a. an originate latching means having a first output level for an originate state and a second output level for an answer state, the originate latching means having a set input connected to a manual switch for switching to the originate state, and a reset input for switching to the answer state;

b. a ring detector means having its input connected to said RI terminal and having an output for shifting from a first to second ring-indicating level in response to a ring signal input;

c. an abort timer means having originate and answer timing cycles and an output which shifts from a first on hook level to a second off hook level during a timing cycle, the abort timer means having a first input connected to the output of said ring detector for initiating an answer timing cycle in response to a ring signal, the abort timer emans also having a second input connected to said output of said originate latching means for initiating said originate timing cycle when said originate latching means switches to its said originate state, said abort timer means further having a reset input connected to said carrier detector for resetting said timer means in response to the receipt of a carrier;



d. an OH driver means connected to the output of said abort timer means for generating an off hook output condition during a timing cycle, said driver means having an output connected to said OH terminal and to said reset input of said originate latching means for resetting said originate latching means in response to a transition from an off-hook state to an on hook state, the driver means also having an input terminal connected to said carrier detector for generating said off hook output condition when a carrier is being received.

3,842,208
SENSOR MONITORING DEVICE

Theodoros G. Paraskevakos, Athens, Greece, assignor to Paraskevakos Electronics & Communication, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 260,511, June 7, 1972, which is a continuation of Ser. No. 76,436, Sept. 29, 1970, and a continuation-in-part of Ser. No. 125,705, March 18, 1971.
This application July 11, 1972, Ser. No. 270,637
Claims priority, application Greece, Apr. 25, 1972, 45068
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **16 Claims**

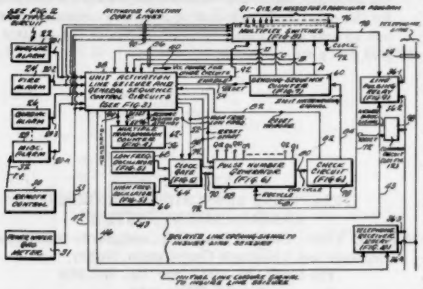
1. A monitoring device for direct electrical connection to a telephone line, which device automatically generates signals for accessing a predetermined remote telephone receiver

through direct connection with the telephone line in response to the triggering of an input sensor and which thereafter automatically generates further identifying and data digital pulse signals for transmission to the remote receiver, said monitoring device comprising:

input terminals adapted for respective connection to corresponding input sensor circuits,

output terminals adapted for direct electrical connection to said telephone line,

activation means connected to said input terminals for activating said device and for reliably seizing control of the telephone line even if then being used by first electrically closing said telephone line, then electrically opening said telephone line for a predetermined delay period sufficient to insure that the telephone line is restored to



a non-busy condition and then subsequently electrically closing said telephone line thus reliably seizing control of same all in response to the triggering of any of said input sensor circuits,

first signal generating means connected to respond to the output of said activation means by automatically generating a predetermined sequence of signals at said output terminals for accessing said predetermined remote telephone receiver during a first time interval, and

second signal generating means connected, to automatically generate and multiply transmit a predetermined sequence of identifying digital pulse signals and data digital pulse signals at said output terminals during a second subsequent time interval representing the identity of said device and of the triggered input sensor circuit.

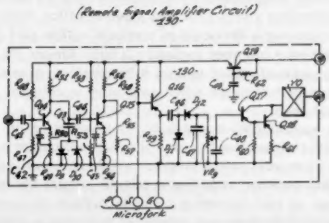
3,842,209
TELEPHONE ANSWERING INSTRUMENT AND SYSTEM WITH REMOTE CONTROL

Francis A. Foresta, Paramount, and Elmer C. Bonsky, Long Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.

Continuation of Ser. No. 321,695, Jan. 8, 1973, abandoned, which is a division of Ser. No. 238,470, March 27, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,153

Int. Cl. H04m 1/64

U.S. Cl. 179—6 E **1 Claim**



1. In a telephone answering system for responding to telephone messages received over a telephone line and which comprises an announcement storage means and a message storage means and respective associated transducers, and first and second means for driving said announcement storage means and said message storage means respectively relative to said transducers for producing a recorded announcement for the announcement storage means in response to an incoming telephone call and for subsequently recording a message from the calling party on said message storage means, the combination of: an input/output circuit coupled to the telephone line for receiving signals from the telephone line and for transmitting signals to the telephone line; first control circuit means connected to said input/output circuit for activating said announcement storage driving means in response to said incoming telephone call to introduce signals to said input/output circuit corresponding to said recorded announcement for transmission to the calling party; second control circuit means coupled to said announcement storage means for actuating said message storage driving means at the termination of said announcement so as to initiate the recording of the aforesaid message from the calling party on said message storage means, so that successive messages are recorded on said message storage means corresponding to a succession of received telephone calls; third control circuit means including a relay, said third control circuit means having its input connected to said input/output circuit and responsive to a tone signal of a particular frequency received over the telephone line for energizing said relay, said third control circuit means including a section activated by said relay for returning said message storage means to its origin position, fourth control circuit means connected to said message storage driving means for causing said message storage driving means after it has returned to its origin position to move forward and introduce signals to said input/output circuit thereby to transmit the successive messages recorded thereon over the telephone line; and fifth control circuit means activated by said relay and connected to said fourth control circuit means for stopping said message storage means in response to a second tone signal of said particular frequency distinct from the first-mentioned tone signal, said second tone signal being received over the telephone line while said message storage driving means is moving forward under the control of said fourth control circuit means.

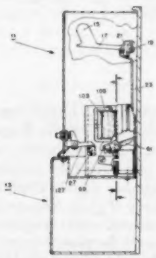
3,842,210
OPTIONAL PREPAY COIN OPERATED TELEPHONE SYSTEM

Charles E. Dawson, Lakeland, Fla., assignor to Telephone Corporation of America, Lakeland, Fla.

Filed Feb. 2, 1971, Ser. No. 99,727

Int. Cl. H04m 17/02

U.S. Cl. 179—6.3 R **75 Claims**



1. In coin control apparatus for use in connection with a coin operated telephone system wherein a station employing a hook arm and handpiece and including a hopper enclosed in a housing wherein vane means and releasable coin trap means are adapted to be positioned to refund or collect coins held in

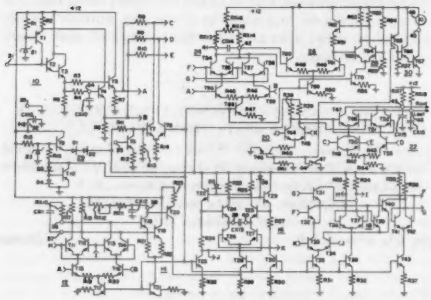
escrow within the hopper, the invention comprising, in combination a coin trap latch for maintaining the coin trap means for escrow of the coins or for releasing the coin trap means for collection or refund of the coins; a mechanical connection from the hook switch hanger arm for insuring positioning of the vane means and coin trap latch in positions for refund while the handpiece is in the on-hook condition and for enabling latching of the coin trap latch when the handpiece is in the off-hook condition; electro-mechanical sequencing means operative in response to electrical signal energy received at the telephone station in accordance with answer supervision for insuring that the vane means is positioned in position to collect the coins and then releasing the coin trap means via the latch to drop the coins; said coin trap means comprising a coin trap, pivot means and an extension extending from the pivot means in a direction different from the coin trap means; said latch comprising a pivotally mounted trigger adapted to engage the extension and maintain the coin trap in a coin holding position until disengaged by the sequencing means in response to said signal and said vane means comprising a vane pivotally mounted for movement through an arc.

3,842,211

MONOLITHIC STEREO DECODER

John G. Metro, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 122,769, March 10, 1971. This application Nov. 16, 1972, Ser. No. 307,066
Int. Cl. H04h 5/00
U.S. Cl. 179—15 BT **3 Claims**



1. In a monolithic integrated circuit for deriving first and second stereophonically related audio frequency signals from a composite signal including frequency components in the form of the sidebands of a difference combination of said first and second audio frequency signals amplitude modulated on a suppressed carrier wave of given frequency, a sum combination of said first and second audio frequency signals lying in a frequency band lower in frequency than said sidebands and separated therefrom by a frequency gap, and a pilot signal at a frequency equal to one half that of said suppressed carrier wave and which lies in said frequency gap, a phase-locked loop for reconstituting said suppressed carrier comprising,

a controlled oscillator adjusted to oscillate nominally at the frequency of said suppressed carrier,

frequency dividing means responsive to the signal generated by said oscillator for producing an output signal nominally at the frequency of said pilot signal and having a staircase waveform and a square waveform during alternate half cycles,

and detector means responsive to the pilot signal of said composite signal and to the frequency divided output of said controlled oscillator and coupled to said oscillator to lock the frequency thereof to said given frequency,

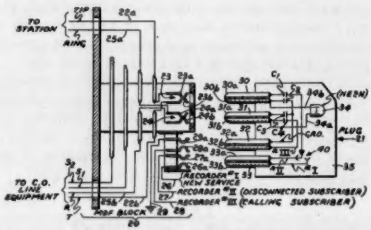
said frequency dividing means comprising flip-flop means having main switch means, gate switch means, clock switch means responsive to the signal generated by said oscillator, and current source means for said main switch means and said gate switch means, said main switch means having first and second output current paths, each output current path conducting gate switch means current and main switch means current for one half cycle of the oscillator signal and main switch means current alone for the other half cycle during alternate conduction periods of said main switch means, all under the control of said clock switch means.

3,842,212

TELEPHONE SUBSCRIBER RECORDED ANNOUNCEMENT SYSTEM

Harlan E. Miller, Old San Juan, P.R., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 20, 1972, Ser. No. 307,908
Int. Cl. H04g 1/24
U.S. Cl. 179—91 R **4 Claims**



1. An improved system for connecting recorded messages to telephone subscriber's lines for application on the main distributing frame of the central office telephone equipment of the type having an isolation plug-jack arrangement and a recorder distribution block wherein the improvement comprises a cut-off plug having:

a. a first plug member for disconnecting an out-of-service subscriber's line from the central office equipment by separating a first pair of contacts within said jack, said first plug member including a first jumper for coupling one of said out-of-service subscriber's contacts to a first recorded message when said plug is coupled with said jack; and

b. a second plug member for disconnecting an incoming caller's line from the central office equipment by separating a second pair of contacts within said jack, said second plug member including a second jumper for connecting one of said incoming caller's contacts to a second recorded message and means for activating a central office ring cut-off relay whereby said out-of-service subscriber becomes connected with said first recorded message when attempting to place a call on said central office

equipment, and said incoming caller becomes connected with said second recorded message when attempting to place a call to said out-of-service subscriber.

3,842,213

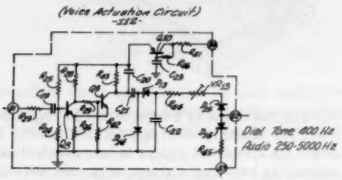
TELEPHONE ANSWERING INSTRUMENT AND SYSTEM WITH DISCONNECT BY SILENCE OR TONE

Francis A. Foresta, Paramount, and Elmer C. Bonsky, Long Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.

Continuation-in-part of Ser. No. 238,470, March 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 52,636, July 6, 1970, abandoned. This application May 29, 1973, Ser. No. 364,729

Int. Cl. H04m *17/02*

U.S. Cl. 179—6 R **5 Claims**



1. In a telephone answering system for responding to telephone calls received over a telephone line and which comprises an announcement storage means and a message storage means and respectively associated transducers, and first and second means for driving said announcement storage means and said message storage means respectively relative to said transducers for producing a recorded announcement from the announcement storage means in response to an incoming telephone call and for subsequently recording a message from the calling party on said message storage means, the combination of: first control circuit means for activating said announcement storage driving means in response to said incoming telephone call to reproduce said recorded announcement for transmission to the calling party; second control circuit means coupled to said announcement storage means for activating said message storage driving means so as to initiate the recording of the aforesaid message from the calling party on said message storage means at the termination of the transmission of the announcement; third control circuit means for de-activating said message storage driving means so as to terminate the recording of the aforesaid message on said message storage means; and a further circuit means for receiving discontinuous audio signals corresponding to said message and for developing a control signal in response to said discontinuous audio signals for application to said third control circuit means to maintain said third control circuit means ineffective as long as said message continues, said further circuit means including a first network having means responsive to said discontinuous audio signals for developing a charging current in the form of pulses only in the presence of said discontinuous audio signals; a second network connected to said first network and including means to be charged by the charging current pulses developed thereby so as to develop said control signal only in the presence of said charging current pulses, said means in said second network including rectifier means for rectifying said pulses, and said means in said second network further including a capacitor for receiving the rectified pulses from said rectifier to be charged thereby and across which said control signal is developed, and a third network connected to said second network including means for discharging said second network in the absence of said charging current.

3,842,214

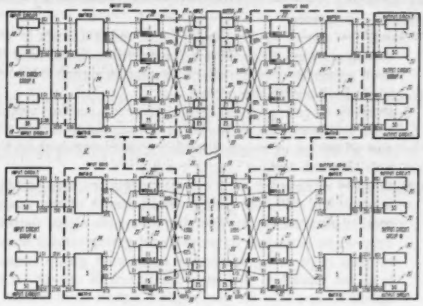
PATH FINDING SYSTEM

Otto Altenburger, Rochester, and Alton Dorazio, Jr., East Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,458

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 EA **31 Claims**



1. In combination with a switching network having a plurality of input inlets and a plurality of output inlets arranged in grids, said grids connected via at least one of a plurality of links, with each link having a unique path to any one input and any one output inlet of said grids connected thereby, a path finding system for interconnecting a marked input inlet with a single one of one or more marked output inlets comprising:

first scanning means for identifying a link having an available path to the marked input inlet and to at least one marked output inlet;

second scanning means for selecting a marked output inlet having an available path to the identified link, and

circuit means for applying an energizing potential to the marked input inlet and the selected output inlet via the identified link.

3,842,215

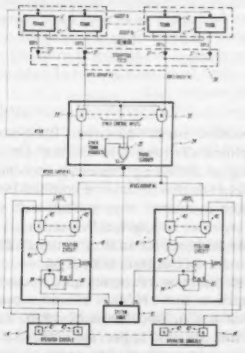
PRIVATE BRANCH EXCHANGE OPERATOR TRUNK GROUP SELECTION MEANS

Stanley L. Russell, Webster; Klaus Gueldenpfennig, Penfield, and Uwe A. Pommerening, Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,561

Int. Cl. H04m *3/00*

U.S. Cl. 179—27 D **5 Claims**



1. In combination with a private branch exchange having a plurality of trunk circuits, any one of which is connectable to

any one of a plurality of operator consoles, each console having an individual control circuit for controlling connections thereto under the control of a common control means which detects operator service request signals via request leads from the trunk circuits, there being one signal generated at a time, the common control means applying each detected signal to the control circuits to enable the requesting trunk to be connected thereto, operator trunk group selection means for affording console operators selectivity in servicing trunk circuits, comprising:

means for arranging the trunk circuit request leads in serviceable groups to provide an individual request lead for each group for passing on service request signals from any trunk lead within the group;

a plurality of gating circuit means for each control circuit, each gating circuit means being connected to a different one of the group request leads for receiving request signals thereon, and

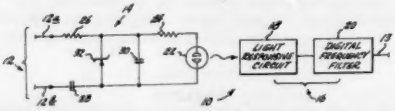
a plurality of keys for each console, each key being associated with a different gating circuit means of the associated control circuit for applying an enable signal thereto, only when actuated, to permit said gating circuit means to pass request signals on its connected group request lead for enabling said associated control circuit to respond to operator service request signals from trunks in the corresponding group via the common control means.

3,842,216

FREQUENCY-SELECTIVE RINGING CURRENT SENSOR FOR TELEPHONE LINE

James Owen, Milwaukie, and El Don L. Hoven, Lake Oswego, both of Oreg., assignors to Ford Industries, Inc., Portland, Oreg.

Filed Aug. 7, 1972, Ser. No. 278,217
Int. Cl. H04m *1/26*
U.S. Cl. 179—84 L **6 Claims**



1. Apparatus for sensing the presence of AC ringing current in a telephone line, where such current has a frequency no less than a certain frequency, said apparatus comprising

an electric light source,

a circuit for connecting said source to such a line to energize the former with AC current flowing in the latter whereby the intensity of light emitted by the source varies at the same frequency as that of such current,

a light-responsive circuit optically coupled to said source, operable to produce an electrical-intensity-varying signal having the same frequency as that of light-intensity variations in the source, and

a digital frequency filter operatively connected to said light-responsive circuit, operable to produce a responsive output signal for said apparatus only in the event that the frequency of a signal produced by said light-responsive circuit is no less than said certain frequency.

3,842,217

RECORD FABRICATION OF A CAPACITIVE TYPE STORAGE MEDIUM

John Kaufmann Clemens, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

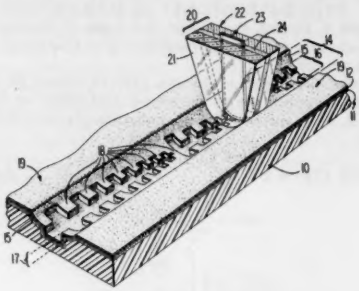
Division of Ser. No. 126,772, March 22, 1971. This application Dec. 26, 1972, Ser. No. 318,334
Int. Cl. G11b *11/12*
U.S. Cl. 179—100.4 C **8 Claims**

1. A recording method comprising the steps of:

1. coating a spiral groove in the surface of a disc with a material of a character exhibiting a difference in its resistance to dissolution in a developing fluid of a given type after subjection to electron beam bombardment;

2*a*. intruding successive regions of the coated groove bottom along said spiral on said disc surface in the path of a beam of electrons, while simultaneously

2*b*. alternating the intensity of said beam of electrons, between a first intensity level substantially equal to zero and a second intensity level appreciably greater than zero, under the control of signals to be recorded; and



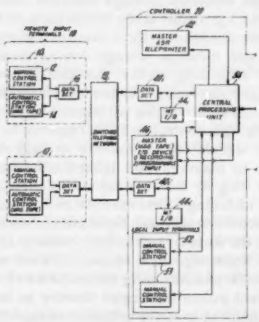
3. subjecting said disc surface, after said intrusion of said coated groove bottom regions in said path, to a flow of developing fluid of said given type whereby to provide a disc having successive groove bottom regions of differing depths representative of said signals.

3,842,218

AUTOMATED TELEPHONY TESTING AND POLLING APPARATUS

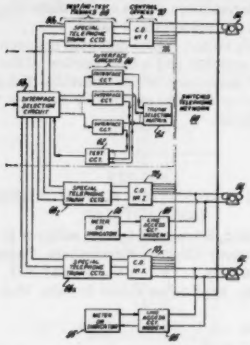
Paul V. DeLuca, Port Washington; Vincent F. Santulli, Manhasset; John J. Gazzo, Jr., Commack, all of N.Y.; George Manos, Bridgeport, Conn., and John Mickowski, Maplewood, N.J., assignors to Porta Systems Corporation, Roslyn, N.Y.

Continuation-in-part of Ser. No. 270,058, July 10, 1972, Pat. No. 3,752,940. This application Dec. 11, 1972, Ser. No. 313,817
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **25 Claims**



1. In combination, digital processing means, at least one input source means connected to said processing means, said input source means including means for supplying to said processing means telephone subscriber identification number, said processing means including means for determining the operation desired by said input source means for said subscriber number, plural special trunks each adapted to not

cause subscriber ringing when a subscriber is accessed thereover, subscriber access means responsive to information entered in said processing means for accessing a selected telephone subscriber via a selected one of said special trunk means, test circuit means, and means for automatically connecting said test circuit means to said selected special trunk means.



3,842,219

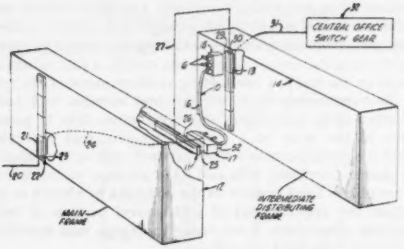
METHOD OF USING GANG CONNECTOR AND PATCHING CABLE ASSEMBLY

Karl R. Anderson, Pasadena, Calif., assignor to John T. Thompson, Los Angeles and George W. Gillemot, Santa Monica, both of, Calif.

Division of Ser. No. 175,281, Aug. 26, 1971, Pat. No. 3,781,758. This application May 2, 1973, Ser. No. 356,456

Int. Cl. H04m 3/22

U.S. Cl. 179—175.25 **5 Claims**



1. That method of maintaining uninterrupted telephone service in a telephone system while changes are being made therein and which system includes central office equipment utilizing spaced apart first and second sets of terminal boards each including an elongated rectangular main body supporting a multiplicity of pairs of closely spaced terminal lugs arranged in rows extending lengthwise from end to end thereof and normally connected by individual conductors to respective terminal lugs of a terminal board in the other set thereof, said method comprising providing a long flexible patching cable assembly long enough to reach between any selected terminal board in said first and second sets of terminal boards and the ends of which patching cable assembly include a respective gang connector having a multiplicity of pairs of closely spaced contactors alignable and in direct contact with respective pairs of terminal lugs of said terminal boards and each of which contactors is connected to a separate conductor of said patching cable, clamping said gang connectors firmly in place over the terminal lugs of said first and second sets of terminal boards having their terminal lugs interconnected by conductors of the existing telephone system thereby to establish a duplicate set of connections between said selected terminal boards in parallel with said existing telephone system connections, and maintaining said temporary patching cable connections intact while service operations are being performed on said existing telephone system connections.

3,842,220

METHOD FOR DETECTING FAULTS IN REGENERATORS IN A PCM-SYSTEM

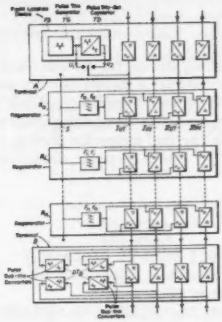
Juho Arras, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 15, 1973, Ser. No. 323,919

Claims priority, application Sweden, Jan. 27, 1972, 915/72

Int. Cl. H04b 3/46

U.S. Cl. 179—175.31 R **5 Claims**

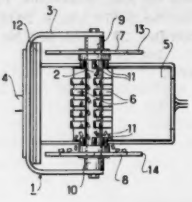


1. Method for detecting faults in the links between first and second terminals of a PCM transmission system wherein the pulse trains are transmitted via at least one stage of regeneration in each direction comprising the steps of: for fault location in a first link having a transmission direction from the first terminal to the second terminal, transmitting from the first terminal on the first link a pulse train including first pulse trios, the three pulses of each first pulse trio having alternating polarities with the first pulse of each such trio shifting polarity in synchronism with a pass frequency selected and allotted to the one stage of regeneration, filtering the first pulse trios regenerated by said one stage to select a sinusoidal signal having the selected pass frequency, and transmitting the selected sinusoidal signal, if present, to indicate that the transmission from the first terminal through the one stage of regeneration was fault free; and for fault location in a second link having a transmission direction from the second terminal to the first terminal, transmitting from the first terminal on the first link, a pulse train including pulse duos, the two pulses of each pulse duo having opposite polarities, and the first pulse of each pulse duo shifting polarity in synchronism with said selected pass frequency, at the second terminal converting the pulse duos to second pulse trios having the same properties as the pulse trios transmitted from the first terminal during the fault location in said first link, transmitting from the second terminal the second pulse trios on the second link, filtering the second pulse trios regenerated by the one stage in the second link to select a sinusoidal signal having said selected pass frequency, and transmitting the selected sinusoidal signal, if present, to indicate that the transmission from the second terminal through the one stage of regeneration in the second link was fault free.

3,842,221
CIRCUIT BREAKER WITH AUTOMATIC ICE REMOVAL MEANS ON CONTACT BAR

Jacques Dayet, Lyon; Pierre Bastide, Villeurbanne, and Marcel Besson, Lyon, all of France, assignors to Delle-Alsthom, Villeurbanne, France

Filed Oct. 23, 1973, Ser. No. 408,908
Claims priority, application France, Oct. 20, 1972, 72.37319
Int. Cl. H01h *9/00, 1/60*
U.S. Cl. 200—52 R **3 Claims**

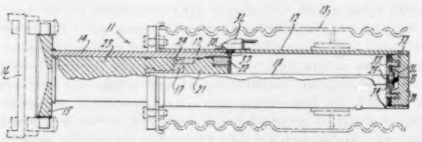


1. In an ice-breaking device for an electrical equipment separation device including; a mobile contact supported for movement and provided with fingers engageable with a fixed contact bar, the improvement comprising studs provided on the periphery of the bar, and means for driving, said studs in rotation about the bar axis in response to movement of said mobile contact.

3,842,222
IMPACT SENSOR ASSEMBLY

Keith C. Hogland, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 28, 1973, Ser. No. 336,658
Int. Cl. B60r *21/02*
U.S. Cl. 200—61.44 **1 Claim**



1. A motor vehicle energy absorbing apparatus having a cylindrical housing adapted to be mounted on a vehicle frame member,

a sleeve member telescopically slidable within the cylindrical housing from one end of the latter,

a piston and piston rod assembly projecting into the sleeve, the piston being mounted on one end of the piston rod, passageways in the piston providing communication between both sides thereof,

a compressible material located within the sleeve and capable of passing from one side to the other of the piston as the sleeve telescopes within the cylindrical housing under vehicle impact conditions,

and anchor means fixedly coupling the piston and piston rod assembly to the other end of the cylindrical housing,

characterized in that:

the anchor means comprises a shearable flange member threadedly mounted on the other end of the piston rod, a shearing means comprising a die nut threadedly anchored in the housing in abutting relation to the shearable flange,

the shearable flange member being coupled to the housing by being held on the die nut by a clamp nut,

the shearable flange member being shearable by the shearing means and permitting axial movement of the piston and piston rod assembly relative to the housing in reaction to an impact force on the energy absorbing apparatus in excess of a predetermined value,

and a crushable switch means mounted between the shearable flange member and a base portion of the die nut in the path of movement of the shearable flange member and adapted upon being crushed by the latter to close an actuating circuit.

3,842,223
LEVER OPERATED SWITCH HAVING ADJUSTABLE CONTACT GAP

Stephen James Bird, Burnley, England, assignor to The Lucus Electrical Company Limited, Birmingham, England

Filed May 7, 1973, Ser. No. 357,707
Claims priority, application Great Britain, May 18, 1972, 23309/72
Int. Cl. H01h *3/16;* **B65h** *25/14*
U.S. Cl. 200—61.58 B **3 Claims**

1. A lever operated electrical switch comprising, a body an operating lever, said operating lever being defined by a conductive strip, means pivotally mounting said strip on said body with a first portion within said body, and a second portion projecting from said body, a movable electrical contact on said first portion of said strip, a fixed electrical contact carried by the body, and engageable by said movable contact to complete an electrical circuit through the switch, a first terminal member on the body, a conductive, resilient member electrically interconnecting said first terminal member and said conductive strip, and urging said conductive strip to pivot relative to the body to a position wherein said movable contact is spaced from said fixed contact, and, screw adjustment means associated with said fixed contact, whereby the position of said fixed contact on the body can be altered so as to adjust the displacement of said second portion of said conductive strip which is necessary to engage said movable contact with said fixed contact.

3,842,224
PRESSURE SWITCH WITH DIAPHRAGM FOR LIQUID BEARING SOLIDS

Frank G. Weis, Kansas City, Mo., assignor to Ecodyne Corporation, Chicago, Ill.

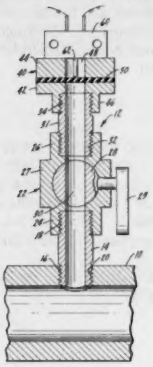
Filed June 13, 1973, Ser. No. 369,638
Int. Cl. H01h *35/34*
U.S. Cl. 200—81.9 R **6 Claims**

1. A pressure switch for use in direct contact with a liquid bearing solids line; comprising:

a. a substantially vertical connecting pipe having a lower end in fluid communication with said liquid bearing solids line so as to receive liquid under pressure therefrom;

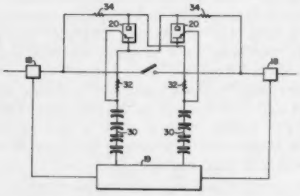
b. a control valve means in fluid communication with said connecting pipe for control of liquid flow therethrough, said control valve means having a passageway therethrough defined by substantially vertical side walls;

c. a housing positioned above said control valve means having a substantially vertical opening therethrough defined by substantially vertical side walls;
d. a diaphragm means, positioned within said housing in closing relationship to said opening, adapted to deflect under varying degrees of pressure of the liquid in said opening;



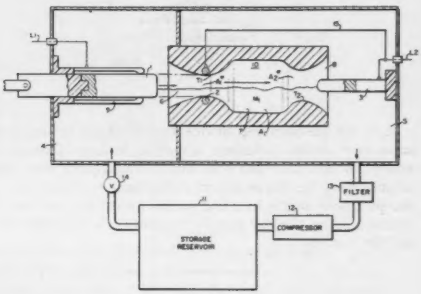
e. switch means positioned above said housing responsive to the deflection of said diaphragm means; and
f. said connecting pipe, said passageway and said opening are substantially in vertical alignment with one another and are of substantially the same diameter so as to eliminate flat surfaces where solids may settle.

3,842,225
HIGH VOLTAGE CIRCUIT BREAKER UTILIZING INSERTION OF A FIXED RESISTANCE DURING OPENING AND CLOSING
Winthrop M. Leeds, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 19, 1973, Ser. No. 324,949
Int. Cl. H01h *33/16*
U.S. Cl. 200—144 AP **6 Claims**



1. A high voltage alternating current circuit breaker, comprising:
a housing;
main contact means disposed in said housing, movable between an open and a closed position;
means for opening and closing said main contact means;
a damping resistor;
resistor insertion means disposed in parallel with said main contact means for synchronously connecting said damping resistor around said main contact means at a voltage zero of the alternating current wave just prior to main contact closing, and for connecting said damping resistor around said main contact means as said main contact means move to the open position during circuit interruption; and
damping resistor current interruption means for interrupting the current flowing through said damping resistor after said main contact means are open and current through said main contact means is substantially zero.

3,842,226
CIRCUIT INTERRUPTER USING A DOUBLE-THROAT NOZZLE
Kue H. Yoon, 5806 5th Ave., Pittsburgh, Pa. 15232
Continuation of Ser. No. 9,374, Feb. 6, 1970, abandoned. This application Dec. 27, 1972, Ser. No. 319,078
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 R **8 Claims**

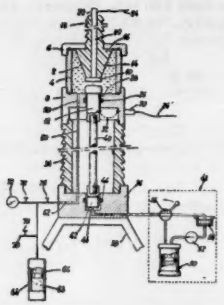


1. A gaseous-type circuit-interrupter comprising a unitary nozzle structure having a pair of spaced first and second throat-portions, each of said throat-portions having a convergent-divergent nozzle configuration, said first and second throat-portions being connected by an interrupting passage having substantially a constant-area cross-section, the inner surface of the interrupting section between said two throat-portions being smoothly surfaced, said unitary nozzle structure having an entrance portion upstream of the first throat-portion, means for establishing an arc within the entrance portion of the first throat-portion comprising a stationary contact disposed adjacent the constriction of the first throat-portion and a movable contact movable during the opening operation upstream away from said first throat-portion, means providing a relatively high-pressure region within said entrance portion and a relatively low-pressure region in the downstream exhausting portion beyond the second throat-portion of the unitary nozzle structure, means including the pressure established in conjunction with said arcing for establishing a supersonic flow of gas within said interrupting passage portion within the unitary nozzle structure between the first and second throat-portions so that a substantial axial length of the arc is subjected to supersonic-gas flow, means including a second stationary contact disposed downstream of the second throat-portion for transferring said arcing from the entrance-portion of the first throat-portion axially through the two spaced throat-portions and extending downstream into the downstream portion beyond the second throat-portion, whereby the flow of gas through the first throat-portion will be from subsonic to supersonic flow and the flow is supersonic within said interrupting passage portion between the two spaced-throat-portions, and the gaseous flow is from supersonic to subsonic through the second throat portion, and the gas pressure increasing as the gas passes through the second throat-portion for rapid arc interruption.

3,842,227
CIRCUIT-BREAKER HAVING DIELECTRIC LIQUID UNDER PRESSURE

Jean Louis Gratzmuller, 66 Blvd. Maurice Barres, 92 Neuilly sur Seine, France

Filed Oct. 2, 1972, Ser. No. 294,291
Claims priority, application France, Sept. 30, 1971, 71.35197
Int. Cl. H01h 33/68
U.S. Cl. 200—150 R 10 Claims



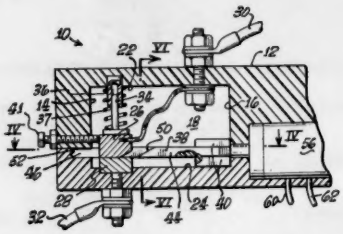
1. A circuit breaker comprising:
a circuit interrupting chamber enclosing an elastically compressible and partially compressed dielectric liquid body;
a fixed contact member disposed in said liquid body;
a cylindrical contact member which is axially movable relative to the fixed contact member between a closed circuit position and an open circuit position and having a portion thereof entering said liquid body so as to additionally compress the same during movement of the movable contact member from said open circuit position to said closed circuit position;
releasable actuating means operable to move the movable contact member from its open circuit position towards and maintain it in its closed circuit position against the sole action of the increased counterpressure created in said liquid body by said additional compression thereof, and means for releasing said actuating means and thereby allow said increased counterpressure to move the movable contact member from its closed circuit position to its open circuit position.

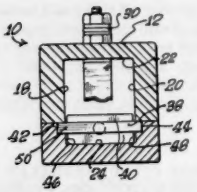
3,842,228
CIRCUIT BREAKER ASSEMBLY WITH INTERPOSED WEDGE NON-CONDUCTOR AND COMPLEMENTARY HOUSING ARC-PREVENTION STRUCTURE

James H. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1973, Ser. No. 391,923
Int. Cl. H01h 9/32, 33/06
U.S. Cl. 200—151 5 Claims

1. A compact non-arcing switch comprising:
a housing which is constructed of dielectric material;
a pair of electrical contacts mounted within the housing wherein at least one of the contacts is mounted for movement between open and closed positions with respect to the other contact;
means for biasing at least one of the contacts to the closed position;
an elongated wedge which is constructed of dielectric material;
means slidably mounting the longitudinal edges of the wedge to the side walls of the housing for moving the wedge forward between the contacts to open the contacts and retracing the wedge rearwardly to allow the contacts to close;
the slidable mounting means also making electrical closure along the paths of slidable engagement with the edges of the wedge so that arcing between the contacts is cut off when the wedge opens the contacts;
means for receiving the forward end of the wedge and making an electrical closure path which joins said paths





of slidable engagement of the slidable mounting means with the sides of the wedge so that forward movement of the wedge will open the contacts and insulate the contacts from electrical arcing along three closure paths therebetween; and
said wedge having an abutment which makes slidable continuous engagement with the side and bottom walls of the housing so as to provide a fourth electrical closure path which joins the other three closure paths to completely isolate the contacts from one another when they are opened.

3,842,229
KEYBOARD PUSHBUTTON SWITCH

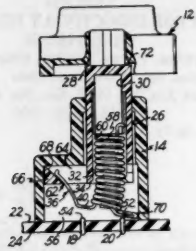
Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 5, 1973, Ser. No. 376,779
Int. Cl. H01h 13/52
U.S. Cl. 200—159 R 10 Claims

1. A keyboard switch comprising:
an electrically insulative base having opposed first and second surfaces, and having a plurality of apertures extending from the first to the second surfaces;
a pair of electrically conductive U-shaped members, each member having two legs joined by a bight portion, each of the legs received in a respective aperture in the base with the bight portion disposed on the first surface;
a keybody having a force receiving end and a force transmitting end;
a housing disposed over the pair of U-shaped members, the housing having guide means aligned with the U-shaped

members, the keybody received in the guide means and movable toward and away from the U-shaped members; means normally biasing the keybody away from the U-shaped member;

a movable electrically conductive bridge member in continuous pivotal contact with the bight portion of one U-shaped member and pivotably movable into and out of engagement with the bight portion of the other U-shaped member; and



means operatively connecting the keybody and the conductive bridge member so that the bridge member moves into engagement with the bight portion of the other U-shaped member when the keybody moves toward the U-shaped member and moves out of engagement with the bight portion of the other U-shaped member when the keybody moves away from the U-shaped member.

3,842,230

PUSHBUTTON SWITCH WITH COIL SPRING CONTACT

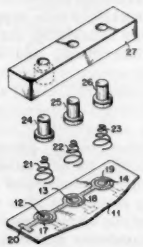
Yukio Kashio, Tokyo, and Hiroshi Ishii, Sagamiko-machi, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sept. 6, 1972, Ser. No. 286,843

Claims priority, application Japan, Mar. 9, 1972, 47-23607

Int. Cl. H01h *1/06, 13/52*

U.S. Cl. 200—276 **18 Claims**



1. A switching device comprising:

an insulation substrate having a nearly plain first surface;

a first nearly plain electrode mounted on said first surface of said insulation substrate;

a second nearly plain electrode mounted on said first surface of said insulation substrate and around said first electrode at a specified distance from the first electrode; a first leadout means coupled to and leading out the first electrode from the surface of the insulation substrate opposite said first surface, said first leadout means extending through said insulation substrate;

a second leadout means on said first surface of said insulation substrate coupled to and leading out the second electrode from said first surface of said insulation substrate;

a coil spring made of a conductive material having one end always in contact with one of the first and the second electrodes and the other end spaced from the remaining electrode when not depressed and in contact with the remaining electrode when depressed so as to electrically connect both electrodes when said coil spring is depressed;

an actuator coupled to said coil spring to depress said other end of said coil spring so as to cause said coil spring to electrically connect the first and the second electrodes when depressed and to be spaced from said one of the electrodes when released; and

a frame carrying said actuator and defining a linear stroke of said actuator to selectively depress said coil spring.

3,842,231

CONTACT SPRING SET FOR AN ELECTROMAGNETIC RELAY

Helmut Schedele, Hoegling, and Werner Bosch, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 6, 1973, Ser. No. 348,683

Claims priority, application Germany, Apr. 10, 1972, 2217218

Int. Cl. H01h *1/26, 9/02*

U.S. Cl. 200—283 **17 Claims**

1. A contact spring set for an electromagnetic relay comprising a plurality of electrical contact elements, and a block formed of insulating material and comprising first and second insulating members adapted to support said contact elements, said first insulating member being formed of thermoplastic material and said second insulating member being formed of an inherently stable plastic material, said block having a recess formed therein, said electrical contact elements having their contact-making parts supported within said recess, one of said contact elements having a portion interposed between said two insulating members, said two insulating members bearing against said one contact element to maintain it in fixed position relative to said second member.

3,842,232

OVEN TEMPERATURE LIMITER

George B. Long, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

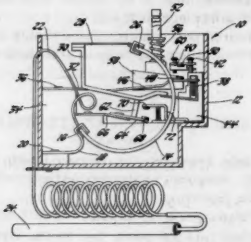
Filed Sept. 28, 1973, Ser. No. 401,589

Int. Cl. H05b *1/02*

U.S. Cl. 219—513 **2 Claims**

1. An oven having an oven temperature control assembly comprising: a circuit extending between electrical input terminals to oven-heating elements for energizing the same; means in said energizing circuit for sensing oven temperature to selectively energize said oven-heating elements for maintaining a preselected temperature within the oven; said sensing

means including a curved Bourdon tube having a pressurized interior filled with a thermally expansive material to cause straightening of the tube with increasing oven temperatures; a contact pair operably controlled by movement of said Bourdon tube to cause said contacts to close only when said thermally expansive material leaks from said Bourdon tube, thus permitting it to assume a fully relaxed operative position which is more curved than the position assumed at room temperature and pressure; circuit breaking means in said



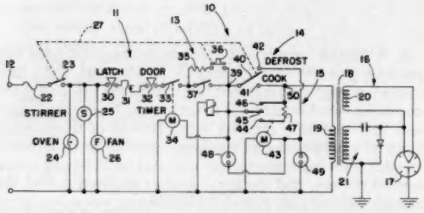
energizing circuit adapted to terminate the energization of said heating elements when the circuit breaker is opened; the terminals of said contact pair being connected respectively to one input terminal of said energization circuit and to one side of said circuit breaking means to produce a shortcircuit extending through said contact pair and said circuit breaking means when said contact pair is closed, whereby an excessive current opens said circuit breaking means to terminate oven energization.

3,842,233

MICROWAVE OVEN DEFROST CIRCUIT

John T. Lamb, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed May 31, 1973, Ser. No. 365,409
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **6 Claims**



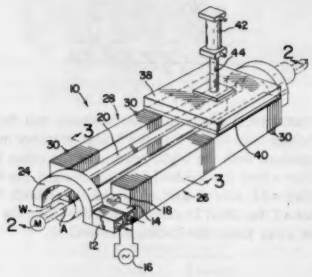
1. An energization circuit for a microwave oven in which cooking and defrosting functions are accomplished by high-frequency energy emitted by a high-frequency energy generator, comprising means for connecting the energization circuit to a source of electric energy, means for coupling energy in the energization circuit to the high-frequency energy generator for energization of the same, selector switch means for coupling the energization circuit in a first configuration to provide a cooking function and in a second configuration to provide a defrost function, and cyclical switch means coupled to said selector switch means and energized thereby when the energization circuit is coupled in the defrost configuration for cyclically providing current to said means for coupling for effecting cyclical energization of the high-frequency energy generator, said cyclical switch means comprising current limiting means for limiting the current to said means for coupling, and said cyclical switch means upon energization by said selector switch means being operable in cyclical manner for providing current to said means for coupling via said current limiting means, then bypassing said current limiting means to provide maximum current to said means for coupling, and then interrupting current to said means for coupling, whereby at the initiation of each energization cycle of the high-frequency generator said current limiting means protects the same from current surges.

3,842,234

INDUCTOR FOR INDUCTIVELY HEATING METAL WORKPIECES

Richard F. Seyfried, Parma Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jan. 10, 1974, Ser. No. 432,142
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.79 **12 Claims**



1. An inductor for inductively heating a metal workpiece comprising, a tubular conductor including spaced apart generally parallel first and second conductor portions having corresponding opposite ends and at least one bridging conductor portion interconnecting corresponding ones of said opposite ends, each of said conductor portions being linear between said opposite ends, said conductor having terminal ends connectable across a source of alternating current for energizing said conductor, said first and second conductor portions being spaced apart for a workpiece to be supported therebetween in magnetically coupled relationship therewith and having opposed conductor faces facing said workpiece, and means selectively operable to vary the current concentration in corresponding axially adjacent areas of said conductor faces of both said first and second conductor portions when said conductor is energized, said selectively operable means including electrically conductive generally planar plate means separate from said tubular conductor and having a length in the direction between said opposite ends equal to the lengths of one of said corresponding areas, said plate means being generally parallel to and overlying and spanning the space between said first and second conductor portions, and motor means to displace said plate means into and out of magnetically coupled relationship with respect to said first and second conductor portions.

3,842,235

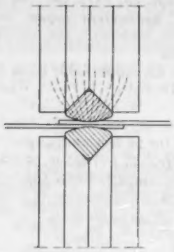
METHOD OF ELECTRIC SEAM RESISTANCE WELDING

Paul Opprecht, im hinteren Bernold, 8953 Bergdietikon, Switzerland

Filed Dec. 14, 1972, Ser. No. 315,007
Claims priority, application Switzerland, Feb. 18, 1972, 2387/72
Int. Cl. B23k *11/06*
U.S. Cl. 219—83 **26 Claims**

1. In a method of electric seam resistance welding by means of a single-wire electrode in contact with two electrode sup-

port rolls, the improvement wherein the wire electrode is prehardened by drawing or rolling the wire, before said wire runs onto the first electrode support roll, to an extent such that substantially no further permanent deformation occurs



under the subsequent welding pressure of the electrode support rolls and at the welding temperature applied, and wherein said wire has a cross section in the shape of a sector having straight or convex flanks.

3,842,236

PROCESS TO CONTROL THE MOVEMENT OF A WORKPIECE WITH RESPECT TO A BEAM OF A STOCK PROCESSING MACHINE OPERATING BY MEANS OF CONTROLLABLE POWER IRRADIATION

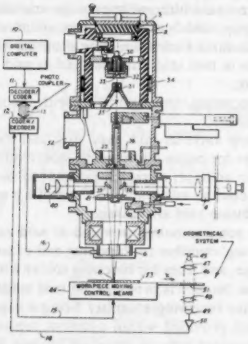
Alfred Von Walter, Munich, Germany, assignor to Steigerwald Strahltechnik GmbH, Munich, Germany

Continuation-in-part of Ser. No. 128,811, March 29, 1971, abandoned, This application Jan. 18, 1973, Ser. No. 324,885

Claims priority, application Germany, Mar. 28, 1970, 2015078

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM **3 Claims**



1. A method for performing work on a workpiece by utilizing a controllable beam of radiant energy comprising the steps of

supplying electrical signals which continuously identify a desired position for the workpiece at any given moment during a machining cycle from working track parameters stored in information storage means,

generating electrical signals which characterize the actual position of the workpiece at any given moment during said machining cycle, said signals forming the output of position sensor means,

continuously comparing said electrical signals identifying said actual position of said workpiece at any given moment during said machining cycle with said desired position in an electrical comparator to develop a difference signal representing any difference between said actual position at that given moment and said desired position, selectively adjusting the point of incidence of the beam of radiant energy on the workpiece relative to the workpiece responsive to said difference signal such that said electron beam is deflected to impinge upon the desired position on said workpiece, and

moving said workpiece to the desired position represented by said desired position identifying signals to obviate any difference between the actual and desired workpiece positions thereby returning said beam of radiant energy to an underflected position.

3,842,237

WELDING METHOD EMPLOYING INCLINED PARALLEL GROOVE

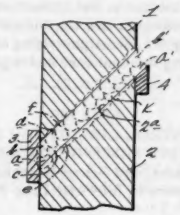
Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1973, Ser. No. 383,056

Claims priority, application Japan, Aug. 28, 1972, 47-85295

Int. Cl. B23k *9/00*

U.S. Cl. 219—135 **10 Claims**



1. A process for arc welding together the ends of two metallic members which have front sides and back sides, which ends are defined, in part, by end surfaces which are correspondingly obliquely inclined in a thickness sense, comprising:

so arranging the two members that they extend generally vertically, one above the other, with said sides corresponding and said end surfaces substantially parallel and in vertical adjacency but spaced one above the other to define a groove which extends obliquely upwardly from a first opening at the back sides to a second opening at the front sides;

positioning a backing strip securely against said back sides to bridge across said first opening;

successively arc welding each of a plurality of beads in said groove, each bead extending along the length of the groove, the beads being deposited in a series preceding from the lower, first opening of the groove to the upper, second opening thereof, to substantially fill the groove.

3,842,238

METHOD OF SEALING NUCLEAR FUEL ELEMENTS BY ELECTRIC WELDING

Eugene S. Boyko, Monroeville; Joseph Campbell, Pittsburgh, and Roger J. Wiggins, Allison Park, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

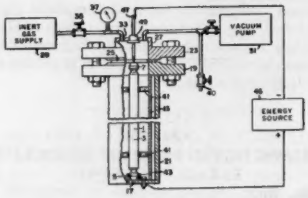
Filed Dec. 8, 1970, Ser. No. 96,153

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **6 Claims**

1. The method of constructing a pressurized nuclear fuel unit in which a predetermined quantity of nuclear fuel is

inserted into a thin-wall elongated metal tube, said tube having a metal plug sealing one end of the metal tube and another metal plug having an axial opening sealing the other end of the metal tube to form a container having electroconductive walls, the axial opening constituting the only communicative path between the interior and exterior of the container and in which at least the metal plug having the axial opening is disposed within a sealed chamber which is thereafter pressurized



with an inert gas to establish a predetermined pressure within the container, the improvement of steps comprising, positioning a fusible welding electrode within the axial opening to make essentially line contact with the wall of the end plug having said axial opening, directing sufficient electrical current through said electrode, line contact and end plug to fuse the electrode by resistance heating, and continuing said fusion of the electrode by arc discharge welding until the axial opening is closed sealing the container under pressure.

3,842,239

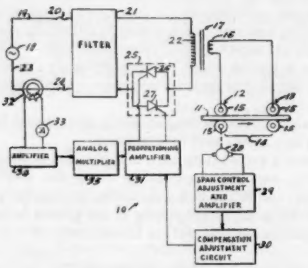
POWER CONTROL CIRCUIT FOR RESISTANCE HEATING MOVING CONDUCTORS

Edgar A. Ellinghausen, and George B. Johnson, both of Crystal Lake, Ill., assignors to Interstate Drop Forge Co., Milwaukee, Wis.

Continuation of Ser. No. 313,500, Dec. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 203,581, Dec. 1, 1971, Pat. No. 3,739,132. This application Aug. 24, 1973, Ser. No. 391,128

Int. Cl. C21d *9/62*

U.S. Cl. 219—155 **8 Claims**



1. In apparatus for resistance heating an elongated electrical conductor which is continuously moved between spaced electrical contacts, an improved circuit for controlling electrical power applied to the conductor through the contacts comprising, in combination, means for applying alternating current power through the contacts to the conductor for heating the conductor by the Joule effect, means generating a signal proportional to the speed of the conductor, means generating a signal proportional to the square of the current applied to the conductor through the spaced contacts, and means for controlling the power applied to the conductor in response to a comparison of said speed signal and said current square signal.

3,842,240

SOLDER REMOVING APPARATUS

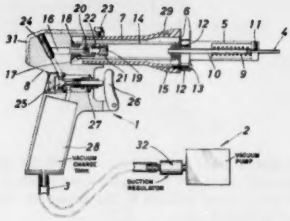
Katumasa Wakita, Yokohama; Issei Yunoki, and Mitunari Yoshida, both of Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Sept. 15, 1972, Ser. No. 289,562

Claims priority, application Japan, Sept. 17, 1971, 46-84514; Oct. 4, 1971, 46-91013; Jan. 13, 1972, 47-6428; Sept. 27, 1971, 46-75310

Int. Cl. H05b *1/00;* **B23k** *3/04*

U.S. Cl. 219—230 **4 Claims**



1. A solder removing apparatus, comprising:
- a hollow bit with an inlet opening through which solder is drawn and an exit through which solder is adapted to exit into a hollow tube;
- a hollow tube having an inlet connected with said bit exit, and an exit connected with a solder receiving chamber;
- a heater surrounding said hollow tube; said heater comprising an enclosed hollow housing within which is positioned said hollow tube and a heater coil, said heater coil being positioned adjacent to said tube to heat it; said heater being connected to heat said bit through connection of said hollow tube with said bit;
- a solder receiving chamber connected with said hollow tube exit; said solder receiving chamber having an air exit connected with an air passage;
- a hand grip supporting said receiving chamber, said hollow tube and said bit; an air passage extending through said hand grip, which passage communicates at one end with said air exit of said receiving chamber thereby to create suction in that said chamber and in said hollow tube and said bit;
- a vacuum pump communicating with the other end of said air passage;
- an air stop valve in said hand grip and located in said air passage for being operated to selectively open and close said air passage; a trigger external to said hand grip and connected to said valve for operating same for opening and closing said air passage;
- a solder stopper being provided at said exit of said solder receiving chamber for blocking exit of solder into said air passage, and filter for blocking solder while permitting air to pass thereby is provided on said solder stopper;
- said solder receiving chamber being a separate removable element provided within a hollow support tube and that said support tube is attached to said hand grip and is positioned between said heater and said hand grip, and said solder receiving chamber is made of glass.

3,842,241

ELECTRICALLY HEATED AQUARIUM TANK

Louis Isaacson, Lexington, and Richard Herrin, Framingham, both of Mass., assignors to Biozonics Corporation, Canton, Mass.

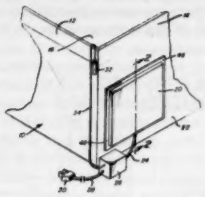
Filed Feb. 9, 1973, Ser. No. 330,987

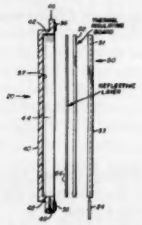
Int. Cl. A01k *63/00;* **H05b** *3/20*

U.S. Cl. 219—311 **2 Claims**

1. In combination, an aquarium tank that may be filled with water, having at least one nonmetallic transparent wall, a

temperature controller having means for sensing water temperature in the tank, means for providing power to said temperature controller, a thin plate-heater, means for coupling heat generating power from the temperature controller to the heater, and adhesive means for affixing the heater to an outside surface of a nonmetallic wall of the tank, said heater comprising a rigid holder constructed of a plastic material and including means forming a cavity having a flat bottom surface and means defining a peripheral edge therearound, said means





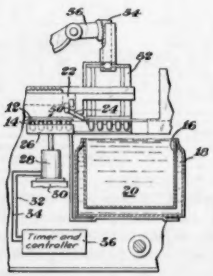
for affixing disposed between said edge and said outside wall surface, a thin metal reflective layer coextensive with and disposed contacting the bottom surface of said cavity, a thermal insulating board coextensive with and contacting the reflective layer and a unitary heating element coextensive in size with said board and including an electrically conductive element and an encapsulating sheet, means for securing said layer, board and surface of the heating element in a sandwich arrangement in the cavity with the heating element contacting the wall surface when the holder is fixed to the tank surface.

3,842,242

APPARATUS FOR HEATING CAPSULE FORMING PINS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1974, Ser. No. 438,912
Int. Cl. F27d *11/00*
U.S. Cl. 219—385 **10 Claims**



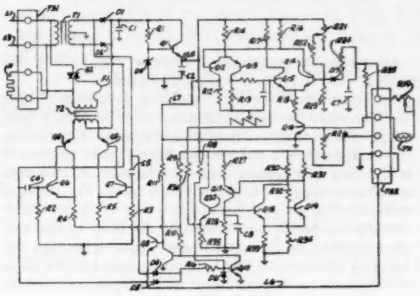
1. Apparatus for preheating capsule forming pins in a capsule forming machine in which successive arrays of forming pins are advanced from position to position including a dipping position and a holding position immediately preceding said dipping position, comprising a thermally insulating container a mass of generally spheroidal particulate heat transfer material, being disposed in said container, means in said container for heating said heat transfer material, and means for cyclically moving said container of heat transfer material with respect to said array of forming pins in said holding position whereby said heat transfer material first surrounds said pins along a substantial part of their length and then is withdrawn with respect to said pins.

3,842,243

TEMPERATURE CONTROL SYSTEM FOR PROPORTIONAL ELECTRIC HEATING

Robert O. Gregory, St. Louis, Mo., assignor to Solitech, Inc., Saint Louis, Mo.

Filed July 16, 1973, Ser. No. 379,208
Int. Cl. H05b *1/02*
U.S. Cl. 219—497 **10 Claims**



1. A temperature control system for proportional control of at least one electrically energized heating element, comprising:

a gate-triggerable semiconductor current switching device adapted for being gated to energize said heating element from a source of a.c. voltage;

a thermistor for sensing the temperature in a zone to be heated by said heating element, said thermisor having a resistance which varies as a predetermined function of the temperature in said zone;

means interconnected with said thermistor for providing a sense voltage which varies as a function of the resistance of said thermistor;

means for providing a periodically varying voltage;

comparator means for comparing the instantaneous magnitudes of said sense voltage and periodically varying voltage and adapted to provide a signal for causing gating of said switching device when there is a predetermined relationship between the magnitudes of said sense voltage and periodically varying voltage;

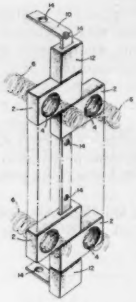
fail-safe means interconnected with said comparator means and said thermistor for preventing said signal for causing gating from being provided if said thermistor is either open-circuited or short-circuited, whereby energization of said heating element is proportionally controlled in response to the temperature sensed in said zone through normal operation of said thermistor.

3,842,244

MODULAR INSULATED HEATING ELEMENT SUPPORTS

Winfield L. Kelley, 1803 Granada Blvd., Coral Gables, Fla. 33134

Filed Mar. 28, 1974, Ser. No. 455,907
Int. Cl. H05b 3/02
U.S. Cl. 219—550 5 Claims



1. Apparatus for supporting resistance wire heating coil elements for use in electric heaters, comprising:

a plurality of resistance wire insulating support members, each member having an elongated cross section, a hole, large enough to accommodate a resistance wire heating element, formed in and passing through said member in a direction substantially normal to the plane of said elongated cross section and offset to one side of the center of said member, the periphery of said hole being circumferentially completely surrounded by the body of said support member, and an elongated slot passing through said member in a direction substantially parallel to the plane of said cross section and offset to the opposite side of the center of said member from said hole;

a frame; and

a mounting member extending through said elongated slots in said support members, said mounting member having respective end portions fixed to said frame for fixedly mounting said support members to said frame;

wherein each support member is mounted on said mounting member independently of each other support member to permit relative longitudinal and lateral movement between adjacently mounted support members, said support members being disposed on said mounting member such that the resistance wire accommodating holes in adjacent support members are located on opposite sides of the longitudinal axis of said mounting member.

3,842,245

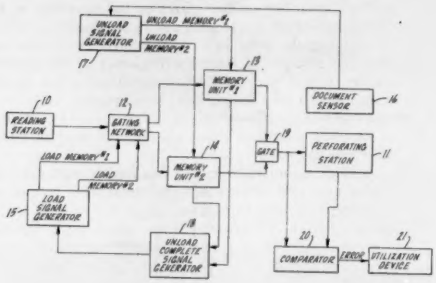
ELECTRONIC CONTROL SYSTEM FOR PUNCH-TYPE ENCODER

Edward M. Schneiderhan, Buffalo Grove, Ill., assignor to Cummins-Allison Corp., Glenview, Ill.

Filed Apr. 19, 1973, Ser. No. 352,683
Int. Cl. G06k 15/00, 5/00
U.S. Cl. 235—61.1 13 Claims

1. In a document processing system having a reading station and a perforating station positioned along a single document processing line, said reading station including means for producing electrical data signals representing the data on documents passed therethrough, and said perforating station including means responsive to electrical data signals for recording data on documents passed therethrough by perforating said documents, the improvement comprising the combination of:

a. memory means operatively connected to said reading station for receiving and storing the electrical data signals produced by said reading station, said memory means including a plurality of memory units each of which is capable of storing all the data from any given document, said memory means further including gating means interposed between the reading station and the memory units for loading successive groups of electric signals representing data read from successive documents sequentially in successive ones of the memory units,



b. document sensing means for generating an electrical control signal in response to the arrival of a document at said perforating station.

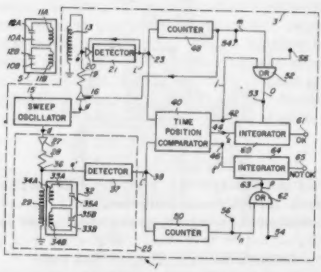
c. and retrieval means coupled to said memory means and responsive to said control signal for retrieving the data signals representing data read from the arriving document and coupling said data signals to the perforating station for actuating said perforating station to re-record the read data on said document by perforating the document, said retrieval means including means for retrieving the data signals stored in one of said memory units while another group of data signals is being loaded into one of the other memory units.

3,842,246

RECOGNITION AND IDENTIFICATION SYSTEM WITH NOISE REJECTION CAPABILITIES

Robert D. Kohler; David P. Sidlauskas, both of San Jose, and Charles A. Walton, Los Gatos, all of Calif., assignors to Proximity Devices, Inc., Sunnyvale, Calif.

Filed Sept. 27, 1973, Ser. No. 401,434
Int. Cl. G06k 7/08
U.S. Cl. 235—61.11 H 12 Claims



1. An improved electronic recognition and identification system for identifying electrically coded passive objects and

generating control signals responsive to the code of the passive objects recognized, the system comprising

a coded external passive electrical identification object having a coded resonant frequency and adapted to be brought within an external sensing zone;

an active electrical signal generation network including a first sensing coil, frequency signal source means repeatedly sweeping through a range of frequencies and joined to said sensing coil to excite said first sensing coil and produce electromagnetic field signals within said external sensing zone for inductive coupling with the external passive object when said object is within said external sensing zone, first detector means engaged to said sensing coil for detecting perturbations in the envelope of the signal across said first sensing coil as the frequency of said electromagnetic field in said external sensing zone approaches said coded resonant frequency of the external passive object and producing condition pulse signals responsive to the time of said perturbations;

an internal sweep reference signal generator means adapted to produce reference pulse signals of a predetermined timing during each sweep;

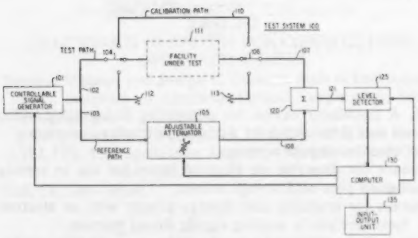
time position comparator means engaged to said detector means and said reference signal generator means for receiving said condition pulse signals and said reference pulse signals and generating a first comparator signal in the event there is time coincidence between said condition pulse signals and said reference pulse signals and a second comparator signal if said reference pulse signals are not coincident with said condition pulse signals; and a first integrator network having input terminal means engaged to said comparator means for receiving said first and second comparator signals, said first integrator being adapted to generate a first output control signal responsive to a succession of said first comparator signals and to inhibit generation of said first control signal responsive to the existence of said second comparator signals.

3,842,247

APPARATUS AND METHOD FOR MEASURING ENVELOPE DELAY UTILIZING π-POINT TECHNIQUE

Theodore Carl Anderson, Middletown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1972, Ser. No. 298,478
Int. Cl. G06f 7/38
U.S. Cl. 235—152 **23 Claims**



1. Apparatus for obtaining a measure of envelope delay of a transmission facility which comprises:

a test circuit path having an input and an output, said test circuit path including means for accommodating a facility to be evaluated;

a reference circuit path having an input and an output;

controllable signal generator means for supplying a test signal at test frequencies simultaneously to the input of said test path and said reference path;

controllable attenuator means connected in said reference path for inserting a loss into said reference path substantially equal to the loss experienced by said test signal in a facility being evaluated at said test frequencies;

summing means having an input and an output, said input being in circuit with the outputs of said test and reference paths for algebraically summing signals propagated through said test and reference paths;

means for obtaining a measure of the signal level of a signal developed at the output of said algebraic summing means; and

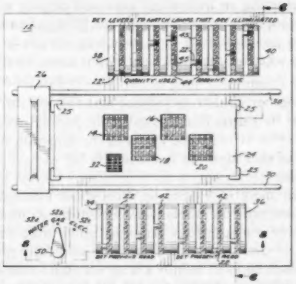
control means for generating signals to control said signal generator means, said attenuator means and said level measuring means, wherein said signal generator means is responsive to selected ones of said control signals selectively to step the frequency of said test signal at a first frequency increment through a predetermined measurement frequency interval and wherein said measured signal level values at said first frequency increments are supplied to said control means to obtain a count of the number of amplitude nulls occurring within said measurement frequency interval, said null count and said measurement frequency interval being utilized to obtain a measure of envelope delay over the measurement frequency interval.

3,842,248

UTILITIES METER READOUT SYSTEM

Neil K. Yarnell, 238 N. Broadoaks, Monrovia, Calif. 91016, and Leland S. Prince, 9014 Charloma Dr., Downey, Calif. 90240

Filed Aug. 17, 1972, Ser. No. 281,387
Int. Cl. G06f 7/39
U.S. Cl. 235—156 **16 Claims**



1. A calculating and printing apparatus for preparing a print-out said apparatus having computing means for calculating output data signals and comprising:

a housing,

a plurality of input register means within said housing each input register means having indicia bearing projections for printing input data on said print-out,

a first plurality of register setting means connected to each of said plurality of input register means for positioning various ones of said projections,

a plurality of output register means within said housing each output register means having indicia bearing projections for printing output data on said print-out,

a second plurality of register setting means connected to each of said plurality of output register means for positioning various ones of said projections,

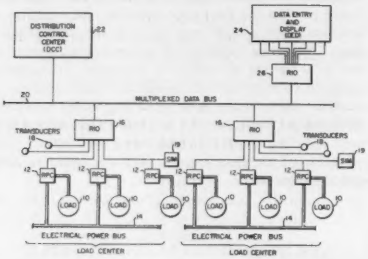
means for sensing the position of said input register means for providing input data signals to said computing means, and

means for indicating said output data signals from said computing means.

3,842,249
ELECTRICAL SYSTEM WITH PROGRAMMED COMPUTER CONTROL AND MANUALLY INITIATED CONTROL MEANS

Manvel A. Geyer, Lima, Ohio; Frank J. Gordon, Baltimore; Richard C. Lyman, Ellicott City, both of Md., and Larry W. Thaxton, Lima, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 190,623, Oct. 19, 1971, abandoned. This application July 24, 1973, Ser. No. 382,263
Int. Cl. G06f *15/56*
U.S. Cl. 235—151.21 **6 Claims**



1. A load management system, for a plurality of electrical loads including switching means associated with each load for the selective application of power from an electrical bus, comprising: data entry and display means having selection means for selecting an individual load and display means for displaying an identifier of a selected load, first indicator means responsive to the condition of a switching means to indicate upon request whether the switching means associated with the selected load is open or closed, means to change the switching means associated with the selected load from one state to the other, second indicator means to indicate whether any of said switching means are tripped, and third indicator means to indicate whether any of said loads are shed; a distribution control center comprising a programmable digital computer including a program operative to control load functions, said functions including switching means resetting, load sequencing and load shedding according to programmed priorities and time delays; data transmission and reception means associated with said switching means, said data entry and display means, and said distribution control center for producing, transmitting, and receiving signals representing conditions of said switching means, signal representing requests made at said data entry and display means, and control signals from said computer.

3,842,250
CIRCUIT FOR IMPLEMENTING ROUNDING IN ADD/SUBTRACT LOGIC NETWORKS

Bruce M. Anderson, New Brighton, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,721
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 **8 Claims**

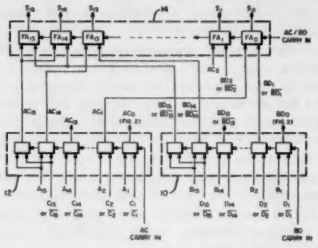
1. An add/subtract circuit for a digital computer comprising:

a. *n* full-adder stages each having first and second operand input terminals, a carry input terminal, a sum output terminal and a carry output terminal;

b. means connecting said full-adder stages in tandem with the carry output terminal of a lower order stage connected to the carry input terminal of its adjacent higher order stage;

c. means for applying corresponding bits of two n-bit operands individually to the first and second operand input terminals of said n full-adder stages;

d. logic means responsive to the bit permutations of the least significant bits of the operands and to a signal determinative of the arithmetic operation being performed, for producing a control signal; and

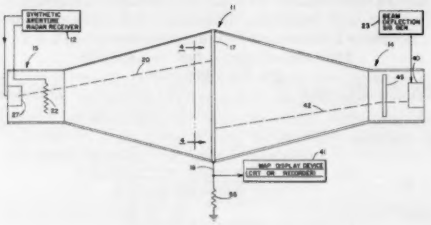


e. means for applying said control signal to the carry input terminal of the lowest order full-adder stage such that the result of said arithmetic operation developed at said sum output terminals approaches a perfectly rounded result.

3,842,251
RADAR DATA MAP CORRELATOR

Joseph William Powers, Jr., Los Angeles, and George H. Towner, Palos Verdes Peninsula, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Oct. 10, 1972, Ser. No. 296,042
Int. Cl. G06g *9/00;* **H01j** *29/06*
U.S. Cl. 235—181 **6 Claims**



1. A correlator device for converting holographic video signals to a form useful for a map type display comprising:

an electron storage screen,

means for directing an electron beam for use in writing signals onto said storage screen,

means for scanning said storage screen with an electron beam for use in reading signals stored thereon,

means for modulating one of said beams with holographic video signals,

electron mask means for modulating at least one of said beams in accordance with an image corresponding to an elemental video unit of the holographic video signals, said mask means being positioned in the path of said one of said beams, and

means connected to said screen for providing an output signal when the image corresponding to the elemental video unit corresponds to an image in accordance with said holographic video signals.

3,842,252
OPTICAL SIGNAL PROCESSING

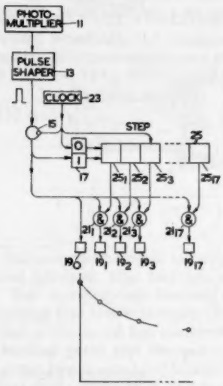
Eric Jakeman, Birtsmorton, near Malvern; Robin Jones, Malvern; Christopher John Oliver, Malvern, and Edward Roy Pike, Malvern, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 22,601, March 25, 1970, abandoned. This application May 26, 1972, Ser. No. 257,355

Claims priority, application Great Britain, Mar. 26, 1969, 15959/69

Int. Cl. G06f *15/34;* **G06g** *7/19*

U.S. Cl. 235—181 **5 Claims**



1. A digital correlator comprising an input to which digital electrical pulses may be supplied, clock means for establishing a plurality of successive time intervals, means responsive to said input pulses and to said time interval establishing means for providing an output whenever a predetermined number of input pulses is exceeded in each of said time intervals, delay means for delaying said output signal, said delay means and said means for providing an output being operatively controlled by the clock signals from said clock means for establishing a plurality of successive time intervals, gate means for multiplying the digital pulse signals received by the input of the correlator with the delayed signals from said delay means, and recording means for receiving digital signals from the multiplying gate means to generate data representative of the correlation of digital signals applied to the correlator.

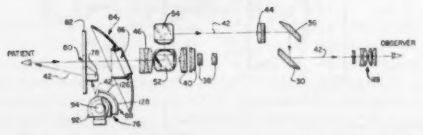
3,842,253
ILLUMINATING SYSTEM FOR CONTACT LENS OPHTHALMOMETER

Terence Walker, and Joseph C. Dianetti, both of East Aurora, N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 310,504, Nov. 29, 1972, Pat. No. 3,791,720. This application Aug. 29, 1973, Ser. No. 392,694

Int. Cl. G02b *23/00;* **F21m**

U.S. Cl. 240—41 R **2 Claims**



1. A device for illuminating an object to be viewed with either of two different modes of illumination, a diffused mode and an undiffused mode comprising:

an eye piece for viewing the object;

a light source for illuminating the object, said light source comprising an incandescent bulb, a diffuser positioned over said incandescent bulb, said diffuser having an aperture therethrough for admitting a stream of undiffused light to pass through said diffuser;

an elliptical reflector positioned to reflect light from said light source which passes through said diffuser toward the object to be illuminated;

a reflector having a reflecting surface for directing said stream of undiffused light on to the object to be viewed;

a movable shutter movably mounted for positioning in two alternate rest positions, a first rest position blocking the optical path between said aperture and the object, and a second rest position blocking the optical path between said diffuser and said elliptical reflector; and

means for moving said shutter from said first position to said second position and vice versa to illuminate the object with either diffused light or undiffused light.

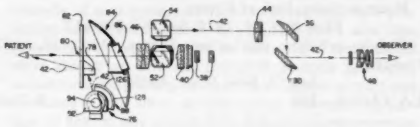
3,842,254
ILLUMINATING SYSTEM FOR CONTACT LENS OPHTHALMOMETER

Joseph C. Dianetti, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 310,505, Nov. 29, 1972, Pat. No. 3,778,135. This application Aug. 29, 1973, Ser. No. 392,839

Int. Cl. G02b *23/00;* **F21m**

U.S. Cl. 240—41 R **1 Claim**



1. A device for illuminating an object to be viewed with either white or ultraviolet light comprising:

an eye piece for viewing the object;

a light source for illuminating the object to be viewed, said light source comprising an incandescent bulb, a diffuser positioned over said incandescent bulb, said diffusing having an aperture therethrough for admitting a stream of undiffused white light to pass through said diffuser;

a reflector having reflecting surface for directing said stream of light on to the object to be viewed; and

an interference type ultraviolet filter movably mounted for positioning into and out of said stream of light, said interference ultraviolet filter blocking a substantial amount of non-ultraviolet light and permitting ultraviolet light to pass therethrough to illuminate the object with ultraviolet light when said interference type ultraviolet filter is positioned in said stream of light, said object being illuminated with white light when said interference type ultraviolet filter is positioned out of said stream of light.

3,842,255
SENTINNEL APPARATUS

John C. Fortis, 62 Vryland Ave., Clifton, N.J. 07011

Filed Aug. 9, 1971, Ser. No. 170,049

Int. Cl. G03b *21/14, 21/26;* **F21m** *7/00*

U.S. Cl. 240—49 **9 Claims**

1. A security device comprising:

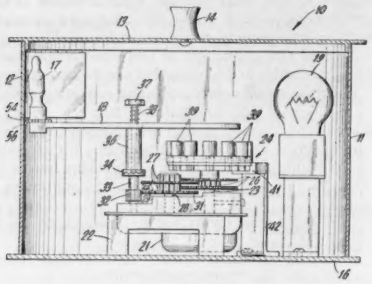
a light source,

a figurine simulating the appearance of a person mounted for movement with respect to the light source,

variable programming means mounted for independent movement with respect to the light source for determining the operation of the light source,

drive means coupled to the figurine and to the programming means for imparting movement to both and

switch means coupled to the light source and periodically



activated by the programming means as it is driven by the drive means to periodically operate the light source in a predetermined manner and project an image of the moving figurine simulating the presence of a person.

3,842,256

MECHANISM FOR THE OPERATION OF RAILROAD TRACK SWITCHES

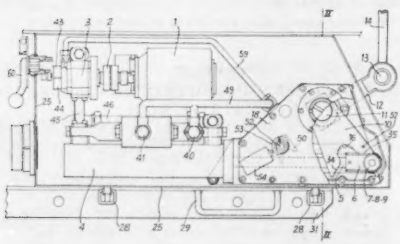
Louis Crutsch, 12, Chemin du Tour des Bois, Le Vesinet, Yvelines, and Bernard Ducassou, 73 rue Gambetta, Suresnes Hauts de Seine, both of France

Filed Nov. 24, 1972, Ser. No. 309,612

Claims priority, application France, Nov. 25, 1971, 71.42215

Int. Cl. B61l *17/00*; **E01b** *7/00*

U.S. Cl. 246—258 **8 Claims**



1. A railroad switch operating mechanism essentially characterized by the novel combination of a reversible rotary electric motor, a volumetric pump coupled thereto and a double-acting hydraulic jack adapted to actuate the switch stem by means of a bell crank axially mounted on a sealed housing containg oil, said oil serving as lubricant for the mechanism and as fluid for the operation of the hydraulic jack.

3,842,257

ALTERNATING LIGHT BARRIER

Friedrich Kohler, Ulm Donau, Germany, assignor to Hans Lingl Anlagenau und Verfahrenstechnik KG, Neu-Ulm, Germany

Filed Apr. 23, 1973, Ser. No. 353,642

Claims priority, application Germany, Apr. 19, 1973, 2320094; May 5, 1972, 2222119

Int. Cl. G01d *21/00*; **G08b** *13/00*

U.S. Cl. 250—206 **6 Claims**

1. An alternating light barrier apparatus comprising:

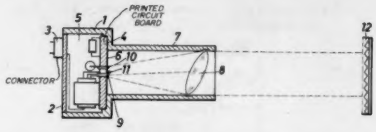
a housing having an aperture for light rays to exit from and enter into,

a light transmitter means within said housing for converting electrical energy into light rays.

a light receiver means within said housing for converting light rays into electrical energy,

electrical oscillator means within said housing having an output electrically connected to said light transmitter means and an input electrically connected to said light receiver means to thereby control the presence or absence of electrical oscillatory signals at the oscillator output in dependence upon the presence or absence respectively of a predetermined amount of light feedback from said light transmitter to said light receiver,

said light transmitter means and said light receiver means being disposed side-by-side in a common plane within said housing at a predetermined distance behind said aperture,



a separating platelet disposed between said light transmitting means and said light receiving means to prevent direct light feedback therebetween, and

a lens obliquely disposed within said aperture for transmitting light therefrom and for receiving light thereinto,

said obliquely disposed lens being inclined sufficiently to define an elliptical focal area at said common plane which elliptical focal area encompasses both said light transmitter means and said light receiver means thereby insuring that an external reflection of the transmitted light will fall upon the light receiver means while at the same time insuring that an internal reflection of the transmitted light will be harmlessly deflected away from the light receiver means.

3,842,258

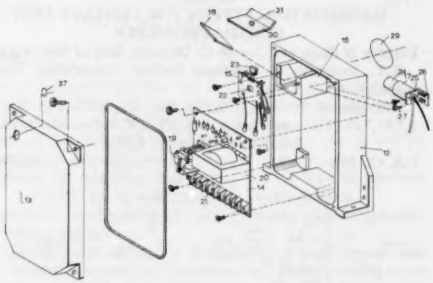
PHOTO RELAY COMPRISING LIGHT-TRANSMITTING PLATE ALSO USED AS A CIRCUIT BOARD

Raymond J. Shaw, Westboro, Mass., assignor to MEKontrol, Inc., Northboro, Mass.

Filed June 25, 1973, Ser. No. 373,031

Int. Cl. H01h *47/24*

U.S. Cl. 250—209 **3 Claims**



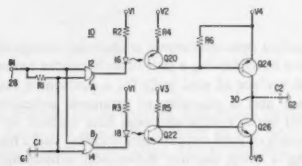
1. A switch, sensitive to beams of light from a source of light comprising:

a. a housing having an opening,

b. a light transmitting plate in the housing, the plate also being used as a circuit board,

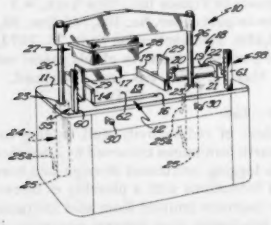
c. a first light-sensitive element mounted on the plate, the opening in the housing allowing beams of light which approach it from a certain direction to impinge on the light-sensitive element,
d. a set of electrical contacts,
e. electrical circuitry associated with the light-sensitive element and the contacts for changing the condition of the contacts when the beam of light ceases to impinge on the light-sensitive element, and
f. a second light-sensitive element adapted to make said electrical circuitry operable when said source of light is generating beams of light to a predetermined degree.

3,842,259
HIGH VOLTAGE AMPLIFIER
John Henry Bruning, Brookside, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Sept. 24, 1973, Ser. No. 400,066
Int. Cl. H01j *39/12*
U.S. Cl. 250—213 A **12 Claims**



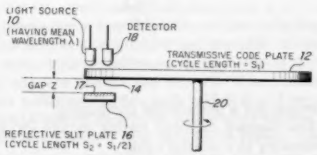
1. An amplifier circuit comprising:
first and second output transistors;
first and second light-emitting sources;
the first and second light-emitting sources being coupled to the first and second output transistors respectively; and
circuit means electrically connected to the first and second light-emitting sources for biasing both sources to cause simultaneous emission light from both sources at a preselected time and to cause prior to and subsequent to the simultaneous emission the second source to emit light and to inhibit light emission from the first source such that conduction occurs in only one of the two output transistors at a time.

3,842,260
SAFETY DEVICE FOR BACON PRESS
Jeffrey P. Christensen, Clarkston, Ga., and Larry E. Helsene, Austin, Minn., assignors to Geo. A. Hormel & Co., Austin, Minn.
Filed Sept. 21, 1973, Ser. No. 399,407
Int. Cl. G01p *3/68*
U.S. Cl. 250—221 **3 Claims**



1. A bacon press for molding slabs of bacon into preselected shapes,
a base,
a generally rectangular-shaped mold for receiving therein a bacon slab to be molded and including a bottom, opposed vertical front and rear walls, and opposed vertical side walls, at least one of said vertical side walls being shiftable relative to the other vertical walls between extended compressing position and a retracted open position for applying lateral compression to the bacon slab,
a horizontal ram connected to said one vertical wall and being extensible and retractable to move said one vertical wall between said compressing and retracting positions,
a vertically shiftable ram shiftable between elevated retracted and lowered compressing portions, said vertical ram having a lower surface engageable with the slab of bacon within the mold to vertically compress the same, when the ram is shifted to the lowered compressing position,
an operating circuit connected to a source of electrical current,
an electrically operated control valve in said operating circuit and controlling sequential operation of said vertical and horizontal rams, said operating circuit and control valve serving to cause said horizontal ram to be extended to first laterally compress the bacon, and thereafter causing said vertical ram to be extended to then vertically compress the bacon slab,
a photoelectric control circuit connected to said operating circuit and including a plurality of vertically spaced apart light receiving components mounted on said base and spaced forwardly and laterally of said mold, a plurality of vertically spaced apart light producing components disposed in spaced opposed relation to said light receiving components and mounted on said base and forwardly and laterally of said mold, said light receiving and light producing components extending vertically from said base upwardly beyond the lower surface of the vertical ram when the latter is in the retracted position and being automatically operable to open said control circuit and operating circuit when an obstruction obstructs the passage of light to any of said light receiving components to thereby instantly stop operation of said vertical ram.

3,842,261
OPTICAL ENCODER USING DIFFRACTION IMAGERY IN A REFLECTIVE MODE
Alan J. MacGovern, Acton, and John A. O'Brien, Reading, both of Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Dec. 20, 1973, Ser. No. 426,874
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 SE **6 Claims**



1. In an encoder which measures the movement of a first radiation transmissive plate, having thereon periodic markings of alternating transmissive and opaque increments relative to a second reflective plate, having thereon periodic markings of alternating reflective and non-reflective increments, the improvement comprising the encoder and a readout system in the encoder being optimally designed while taking into account diffraction effects of radiation in the encoder and comprising:
a. a first transmissive plate having thereon periodic markings of alternating transmissive and opaque increments,

with the length of one transmissive increment — opaque increment cycle being S_1;

b. a second reflective plate side having thereon periodic markings of alternating reflective and non-reflective increments, with the length of one reflective increment — non-reflective increment cycle being equal to one-half S_1 to satisfy diffraction theory;

c. a radiation source for producing radiation having a mean wavelength λ and for directing the radiation through said first transmissive plate onto said second reflective plate where it is reflected and directed back through said first transmissive plate, with relative movement between said first plate and second plates causing modulation of the radiation;

d. a detector means for detecting the modulation of radiation by said first transmissive and said second reflective plates; and

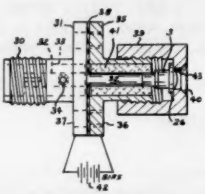
e. means for optimally positioning said first and second plates in accordance with diffraction theory and including means for positioning said first plate relative to said second plate with a gap (Z) between them substantially satisfying the following equation, $Z = nS_1^2/2\lambda$ wherein S_1 and λ have already been defined and n equals an integer of 1 or greater.

3,842,262

HIGH SPEED PHOTODIODE MOUNT

James M. Heitman, and Earl F. Starr, Jr., both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Nov. 12, 1973, Ser. No. 415,856
Int. Cl. H01j *5/02*
U.S. Cl. 250—239 **5 Claims**



1. A mount for a photodiode comprising:

a. a first flanged member having means for electrically connecting to a coaxial cable;

b. a second flanged member having means for supporting said photodiode;

c. an electrically conductive retaining member retaining the said photodiode and making electrical contact with the said photodiode and the said second flange member, and having an aperture for communicating light to said photodiode;

d. an electrically insulating member positioned between the said first flanged member and the said second flanged member forming a capacitance coupling between the said first and said second flange members;

e. means for attaching said flange members to a supporting surface; and

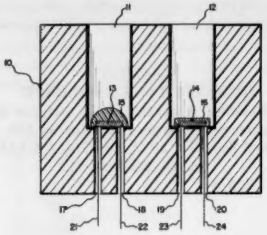
f. means for applying a voltage across said photodiode.

3,842,263

MOLDED OPTO-ELECTRONIC TRANSDUCER

William P. Kornrumpf, and John D. Harnden, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,529
Int. Cl. G02b *5/14*
U.S. Cl. 250—239 **7 Claims**



1. An active opto-electronic transducer comprising:

a molded body having a pair of depressions extending from a first surface of said body for a portion of the thickness thereof and a plurality of channels extending from a second surface opposite said first surface of said body into each of said depressions therein, said channels each having a cross section dimension substantially smaller than the corresponding cross section dimension of said depressions;

a semiconductor light source in a first of said depressions, said semiconductor light source having a pair of electrical leads connected thereto and depending through a pair of said channels; and

a photoresponsive device in a second of said depressions, said photoresponsive device having a pair of electrical leads connected thereto and depending through a pair of said channels;

at least the portion of said molded body between said depressions being optically opaque and of sufficient height to prevent direct illumination of said photoresponsive device by said semiconductor light source;

whereby said semiconductor light source and said photoresponsive device with said connected leads may be easily inserted into said molded body after the pretesting of said semiconductor light source and said photoresponsive device.

3,842,264

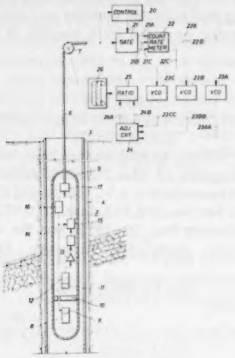
RADIOLOGICAL WELL LOGGING METHODS AND APPARATUS FOR REDUCING THE EFFECT OF ACTIVATION FROM THE DETECTOR CRYSTAL

Dan M. Arnold, and Robert W. Pitts, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 102,743, Dec. 30, 1970, Pat. No. 3,733,486. This application Sept. 25, 1972, Ser. No. 291,869The portion of the term of this patent subsequent to May 15, 1990, has been disclaimed.
Int. Cl. G01v *5/00*
U.S. Cl. 250—264 **7 Claims**

1. A method of radioactivity well logging to investigate subsurface earth formations traversed by a borehole, comprising passing a logging instrument through said borehole, bombarding said formations with a plurality of discrete bursts of high energy neutrons emitted from said instrument during a preselected irradiation time interval occurring during a first portion of the operating cycle to produce a succession of discrete thermal neutron populations in said borehole and formations, detecting radiation at said instrument resulting from capture of said thermal neutron populations during

preselected portions of said first portion of the operating cycle, after termination of the first portion of the operating cycle including said irradiation interval and after said thermal neutron populations in said formations have declined to negligible portions, detecting during a preselected subsequent detection time interval other radiations, produced primarily within a component of said logging instrument as a result of said high energy neutrons are emitted from unstable isotopes



comprising material of the logging instrument, deriving a first electrical indication generally related to the occurrence of said resulting radiations detected during said first portion of the operating cycle, deriving a second electrical indication generally related to the occurrence of said radiations detected during said subsequent detection interval, and deriving from said first and second electrical indications a corrected representation of a characteristic of the earth material bombarded by said high energy neutrons.

3,842,265

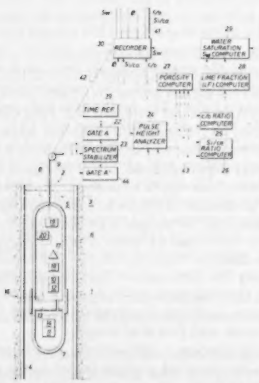
PULSED NEUTRON WELL LOGGING TECHNIQUES WITH BACKGROUND RADIATION REMOVAL

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 264,106, June 19, 1972, abandoned. This application May 21, 1973, Ser. No. 362,582

Int. Cl. G01t *1/16*

U.S. Cl. 250—270 **14 Claims**



1. A method for correcting inelastic gamma ray measurements of earth formations in the vicinity of a well borehole for background gamma rays caused by other than inelastic neutron scattering events comprising the steps of:

repetitively irradiating the earth formations surrounding the well bore with relatively short duration pulses of fast neutrons;

detecting, just prior to each such pulse of fast neutrons, the background gamma radiation in the borehole and storing counts representative thereof in counter memory means;

detecting, during each such pulse of fast neutrons, gamma radiations due to the inelastic scattering of neutrons by materials comprising the earth formations in the vicinity of the borehole together with background gamma radiations and making counts representative thereof; and

subtracting said stored background counts from said inelastic plus background counts and storing the resultant corrected counts in memory register.

3,842,266

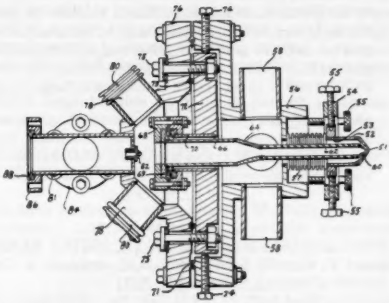
ATMOSPHERIC SAMPLING PROBE FOR A MASS SPECTROMETER

Robert W. Thomas, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 11, 1973, Ser. No. 350,259

Int. Cl. B01d *59/44*

U.S. Cl. 250—288 **5 Claims**

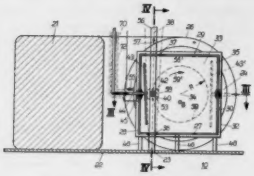


1. A system for continuously sampling gases at atmospheric pressure comprising: a sample probe means, including a first microorifice mounted on a frame and movable in any plane, a second microorifice positioned in line with said first microorifice, adjacent thereto and movable in one plane and a third orifice positioned in line with said first and second microorifices and spaced therefrom; a first stage vacuum system for creating a vacuum; a first vacuum chamber, connected between said first microorifice and said first stage vacuum system; a second stage vacuum system for creating a vacuum of greater magnitude than the first stage vacuum system; a second vacuum chamber positioned within said first vacuum chamber connecting the second stage vacuum system and said second microorifice; a third stage vacuum system for creating a vacuum of greater magnitude than said second stage vacuum system; a third vacuum chamber, connected between said third stage vacuum system and said third orifice, in juxtaposition to said second vacuum chamber and a mass spectrometer detector means connected to the said third vacuum chamber whereby gases entering the sampling probe means pass therethrough forming an uncontaminated molecular beam for detection in the mass spectrometer.

3,842,267
METHOD AND APPARATUS FOR MEASURING, BY IONIZATION, THE FLUX OF VAPOUR EMITTED DURING VACUUM VAPORIZATION

Pierre Genequand, Geneva, Switzerland, assignor to Batelle Development Corporation, Columbus, Ohio

Filed Feb. 7, 1973, Ser. No. 330,537
Claims priority, application Switzerland, Feb. 9, 1972, 1918/72
Int. Cl. H01j *39/34*
U.S. Cl. 250—291 **13 Claims**



1. A method for measuring the flux of vapour emitted by a substance subjected to vacuum vaporization, comprising the steps of

directing a portion of the vapour in the form of a jet through a selected region,

producing, in a volume crossed by the vapour jet, an essentially uniform magnetic field directed essentially perpendicularly to the vapour jet, so that a section of the vapour jet is permanently immersed in the magnetic field;

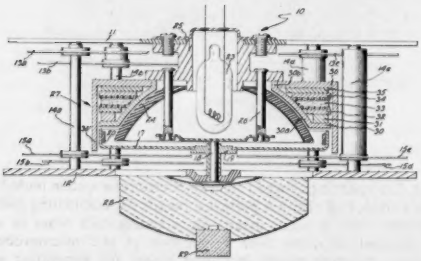
ionizing the particles contained in a delimited volume situated within this section by applying at least one pulse of electrons in a beam intersecting this volume, so that the ionized particles constitute a package of ions describing, under the influence of the magnetic field, a circular trajectory; and

measuring the amplitude of the induced signal which the package of ions generates in the course of its revolutions along the circular trajectory in an electrode situated externally adjacent to this trajectory, whereby this amplitude forms the measure of the flux of said vapour.

3,842,268
DRIVE SYSTEM FOR AUTOMATIC METER READER

Edward P. Cornell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 17, 1973, Ser. No. 397,936
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 SE **8 Claims**



1. A remotely reading meter register comprising

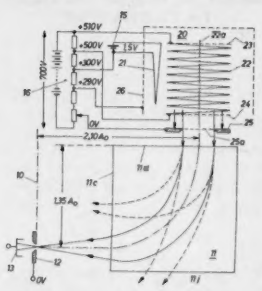
optical encoder means for producing a remotely readable electrical output signal indicative of the rotational positions of a plurality of coupled meter register indicator shafts,

said optical encoder means comprising a light source mounted at least partially within a reflector member shaped to project collimated light, and a rotatable apertured scanning disc operable selectively to transmit the collimated light to a photosensor means in the form of a train of read-out light pulses which are converted by said photosensor means into said electrical output signal, and a scanning disc drive system comprising a hollow core hysteresis motor which includes an annular stator closely surrounding said reflector member and scanning disc and driving a rotor provided by a portion of said scanning disc.

3,842,269
MASS SPECTROMETER OF HIGH DETECTION EFFICIENCY

Helmuth Liebl, Eching, and Klaus Rasskopf, Munich, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Continuation of Ser. No. 292,332, Sept. 26, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,490
Claims priority, application Germany, Oct. 5, 1971, 2149716
Int. Cl. H01j *39/34*
U.S. Cl. 250—298 **6 Claims**



1. A mass spectrometer of high detection efficiency comprising:

an ion source (**20**) including a chamber in which a rarified gas to be analyzed is adapted to be ionized, a metallic open helix (**22**) surrounding a portion of said chamber, a source of electrons (**21**) outside said helix, open grids (**23, 24**) adjacent to and obstructing the two ends of said helix (**22**), a first diaphragm (**25**) spaced from one end of said helix (**22**) centered axially thereto, an open grid (**25***a*) across the opening of said first diaphragm, each of the aforesaid grids (**23, 24, 25***a*) perpendicular to the axis (**22***a*) of said helix (**22**), and means for applying electric potential (**16**) so as to make said grid (**23**) adjacent the end of said helix (**22**) farthest from said first diaphragm (**25**) most positive, said grid (**24**) adjacent the other end of said helix (**22**) slightly less positive, said helix (**22**) at a potential intermediate that of said end grids (**23, 24**), said electron source (**21**) considerably less positive, and said first diaphragm (**25**) and its grid (**25***a*), most negative, the voltage between said end grids (**23, 24**) of said helix being less than 5 percent of the acceleration voltage between the said open grid (**24**) at the end of said helix (**22**) nearer said first diaphragm (**25**) and the open grid (**25***a*) across said first diaphragm;

means for producing a substantially steady magnetic field (**11, 28, 29**) directed at right angles to the axis (**22***a*) of said helix (**22**) of said ion source (**20**) including two pole pieces (**11**) having diverging pole faces (**11a, 11***b*) lying in planes intersecting in a line (**10**) parallel to the axis (**22***a*) of said helix (**22**) of said ion source (**20**) and each

having also first and second mutually perpendicular sides (**11***c*, **11***d*) forming edges with said pole faces (**11***a*, **11***b*), said first sides (**11***d*) being perpendicular to the axis (**22***a*) of said helix (**22**) and said second sides (**11***c*), being parallel to the line of intersection (**10**) of said pole face planes and respectively intersecting said diverging pole faces (**11***a*, **11***b*) in lines defining their edge of nearest approach and hence also defining the throat of the space enclosed by said diverging faces, and

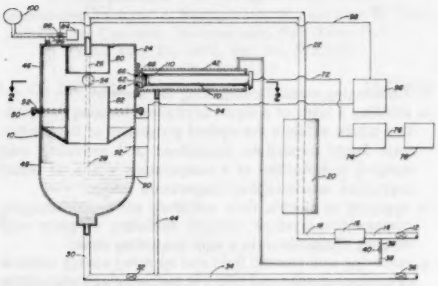
a second diaphragm (**12**) in the form of a slit bisected by said line of intersection (**10**) of said pole face planes, said second diaphragm (**12**) being at a distance A_0 from a boundary plane comprising said second sides (**11***c*) of said pole pieces which is parallel to said line of intersection (**10**) as aforesaid, being also offset by a distance of substantially **1.35** A_0 from a plane comprising said first sides (**11***d*) of said pole pieces, and being further offset by a distance of substantially **2.10** A_0 from said axis (**22***a*) of said helix (**22**).

3,842,270

PRESSURIZED OIL-IN-WATER MONITOR

M. Duane Gregory; James E. Stolhand, and Marvin E. Yost, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 29, 1973, Ser. No. 410,850
Int. Cl. G01n *21/34*
U.S. Cl. 250—301 **13 Claims**



1. An apparatus for monitoring in an aqueous base fluid an oleaginous material which fluoresces when irradiated by ultraviolet light comprising:

a. a vertically positioned tubular housing means for receiving a stream of fluid to be monitored, said tubular housing means having an upper portion having an internal diameter greater than the diameter of the stream of fluid to provide an air annulus therebetween, a bottom section of reduced diameter in which the stream of fluid collects before passing out of the housing and a first and second sealed transparent windows at the same horizontal level in the upper portion of the lateral sidewall of the housing,

b. means for introducing a stream of fluid into the upper portion of said tubular housing means so that such fluid falls through said upper portion without touching the lateral sidewall thereof,

c. means for introducing a beam of ultraviolet light through one of the said sealed windows and into the falling stream of fluid,

d. means for detecting fluorescence radiation mounted outside said tubular housing means opposite the other of the said sealed windows,

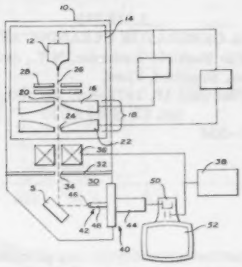
e. a supply of gas at a pressure above the pressure in the tubular housing connected to the upper portion of the tubular housing.

3,842,271

SCANNING ELECTRON MICROSCOPE

Alan E. Gee, Needham, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 24, 1973, Ser. No. 354,039
Int. Cl. H01j *37/26*
U.S. Cl. 250—310 **8 Claims**



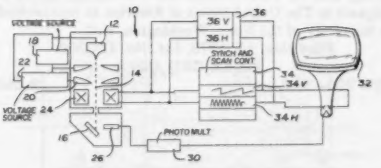
1. In combination with a scanning electron microscope wherein a specimen is bombarded with a beam of corpuscular particles, having a charged particle generator, an objective particle lens for focusing said beam from said generator onto a selected area of said specimen and beam-deflecting means for causing said beam to scan said specimen in a predetermined manner, secondary emission detecting means having a scintillating element consisting of an alkali-free glass doped with a luminescent cerium oxide fixedly secured to glass light-transmitting means, and a photo-electric element for converting said light generated by said scintillating element into an electrical signal proportional to said light.

3,842,272

SCANNING CHARGED PARTICLE MICROPROBE WITH EXTERNAL SPURIOUS ELECTRIC FIELD EFFECT CORRECTION

Vincent John Coates, Los Altos; Leonard M. Welter, Saratoga, and James J. Gold, Mountain View, all of Calif., assignors to American Optical Corporation, Southbridge, Mass.

Filed July 24, 1973, Ser. No. 382,230
Int. Cl. H01j *37/26;* **G01n** *23/00*
U.S. Cl. 250—311 **10 Claims**



1. In a scanning charged particle microprobe system including a source of charged particles, means for collimating said particles into a beam, means for scanning said beam in a predetermined raster over a specimen in said microprobe system, detector means including means for generating a signal proportional to charged particles detected and recording means connected to said detector means to record detection of charged particles exiting the surface of said specimen, the improvement of a waveform function generator to correct the effects of external spurious electric fields which cause unwanted deflection of the beam, comprising; means to deter-

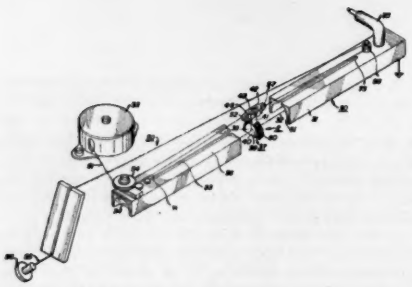
mine said spurious beam deflection at predetermined beam positions, means for generating beam scan correction signals complementary to said spurious beam deflection, means for applying said beam correction signals to said means for scanning said beam whereby said spurious beam scanning distortion deflection may be detected and a function correction to eliminate said distortion may be generated and applied to said scanning means to cause said beam to track over said specimen in substantially said predetermined raster pattern.

3,842,273

CORONA GENERATOR CLEANING APPARATUS

Warren T. Van Buskirk, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 18, 1973, Ser. No. 380,302
Int. Cl. H01j 37/26
U.S. Cl. 250—324 **28 Claims**



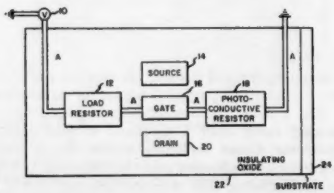
1. A cleaning apparatus for a corona generating device comprising at least one stationary discharge electrode wire and means for cleaning said wire, the improvement wherein said cleaning means comprises: an element having at least one edge which is operative to deflect and scrape said wire to remove contamination therefrom, means for traversing said element in operative engagement along said wire between a home position and an end of travel position and means for disengaging said edge from said wire at said home position.

3,842,274

PHOTOCONDUCTIVELY ACTIVATED GATED, INFRARED CHARGE COUPLED IMAGING DEVICE (PAGIRCCD)

Richard F. Greene, Bethesda; Richard B. Schoolar, Silver Spring, and K. Peter Scharnhorst, Beltsville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1973, Ser. No. 416,300
Int. Cl. G01j 5/00
U.S. Cl. 250—330 **9 Claims**



1. An infrared charge coupled image device for detecting infrared images comprising:

means for providing a source of minority carriers in a substrate;

means for providing a drain for said minority carriers;

gating means disposed between said source providing means and said drain providing means for regulating the flow of said minority carriers from said source providing means to said drain providing means; and,

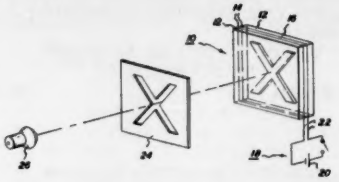
photoresponsive control means connected to said gating means for controlling the regulating function of said gating means.

3,842,275

LIQUID CRYSTAL IMAGING SYSTEM

Werner E. L. Haas, Webster; James E. Adams, Jr., Ontario, and John B. Flannery, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1973, Ser. No. 354,725
Int. Cl. G01t 1/16
U.S. Cl. 250—331 **16 Claims**



1. An imaging method comprising the steps of:

a. prviding a layer of a liquid crystalline imaging composition which exhibits the optical properties of the cholesteric liquid crystalline mesophase and providing said imaging composition at a temperature within its liquid crystalline mesomorphic temperature range;

b. applying an electric field uniformly across said imaging composition layer of strength sufficient to place said imaging composition in a light scattering state;

c. removing said electric field and applying energy capable of producing a thermal effect in said imaging composition to said layer in imagewise fashion, wherein the temperature of said imaging composition in portions of said layer receiving said energy is raised above the isotropic transition temperature of said imaging composition; and

d. cooling the imaged portions of said imaging composition layer to a temperature within the liquid crystalline mesomorphic temperature range of said imaging composition, wherein the imaged portions of said layer assume a light scattering state having a different diffuse scattering density than the background areas of said layer thereby providing a visible image.

3,842,276

THERMAL RADIATION DETECTOR

Peter David Southgate, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

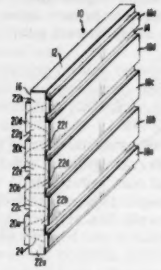
Filed June 15, 1973, Ser. No. 370,479
Int. Cl. G01t 1/24
U.S. Cl. 250—336 **7 Claims**

1. A radiation detector comprising a body of a radiation-sensitive, homogeneous material having a pair of opposed surfaces,

a first set of spaced electrodes on one of said opposed surfaces,

a second set of spaced electrodes on the other of said opposed surfaces,

each of the electrodes of one of said sets overlapping two electrodes of the other of said sets, with each pair of



overlapping electrodes forming an individual detector element in said body with all of said individual detector elements being connected in a series arrangement between said sets of electrodes through and along said body.

3,842,277

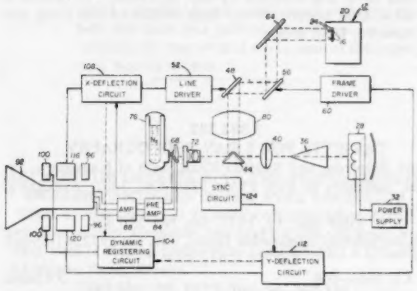
INFRARED SCANNING APPARATUS USING A PLURALITY OF PARALLEL DETECTORS

Yemmanur Jayachandra, Bolingbrook, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,348

Int. Cl. G01t 4/16

U.S. Cl. 250—341 **15 Claims**



1. In a noncontacting apparatus for detecting a characteristic of an article:

means for transferring heat to an incremental area of a surface of the article to heat the area;

at least two heat detector means, each for detecting the thermal radiation response in the same range of radiation wavelengths of a separate one of at least two discrete incremental areas of the surface externally of the heated area, and for generating a signal in accordance therewith;

means for scanning the heat transfer means and the heat detector means in unison with each other and over the surface of the article to generate signals from the heat detector means which vary in accordance with the thermal radiation responses, in the same range of radiation wavelengths, of the scanned incremental areas, and

output indicator means for receiving the signals from the heat detector means.

3,842,278

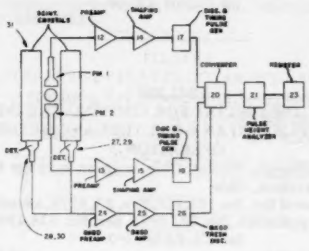
LIQUID SCINTILLATION UNIT WITH LOW BACKGROUND NOISE

John E. Noakes, Rte. 3, Bar H Estates, Athens, Ga. 30601

Filed Jan. 8, 1973, Ser. No. 321,682

Int. Cl. G01t 1/00

U.S. Cl. 250—369 **9 Claims**



1. In a liquid scintillation coincidence counting apparatus having a sample counting chamber with event detecting photodetectors in optical communication therewith, with said event detecting photodetectors connectd to a coincident pulse detection and registration circuit, the improvement comprising radiation guard circuit employing a solid scintillating material and connected in anti-coincident arrangement with said coincident pulse detection and registration circuit, said coincident pulse detection and registration circuit having a timing discrimination means including means associated with each of said event detecting photodetectors for shaping and amplifying pulses from said photodetectors to represent the time interval between pulses from respective photodetectors, and conversion means responsive to said shaping means for generating an information pulse whose amplitude varies as a function of said time interval, whereby pulses induced in said photodetectors due to scintillations from a liquid scintillator in said sample may be discriminated from pulses induced in said photodetectors by other radioactive events.

3,842,279

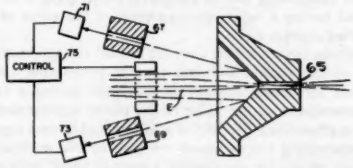
METHOD AND APPARATUS FOR ALIGNING A CHARGED PARTICLE BEAM

Berthold W. Schumacher, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 87,474, Nov. 6, 1970, Pat. No. 3,718,367. This application Dec. 4, 1972, Ser. No. 312,177

Int. Cl. H01j 37/00; G01n 23/00

U.S. Cl. 250—397 **9 Claims**



1. Apparatus for aligning a beam of charged particles with a section of an elongated passageway provided with a transverse wall having a beam aperture through which said beam passes, said wall being effective to emit X-rays when impinged by said charged particles, said beam alignment apparatus comprising: a set of X-ray detectors with collimators, said collimators being so aligned as to pass X-rays only if they come from certain portions of said wall with which said colli-

mators are aligned, and signal processing means which compares the signals from the various X-ray detectors to ascertain which edge portion of the beam aperture is impinged by an excessive amount of said charged particles and therefore emitting an excessive amount of X-rays, and beam deflecting means responding to said signal processing means so as to equalize the signal strength received by all of said X-ray detectors thereby to align said beam in said aperture.

3,842,280

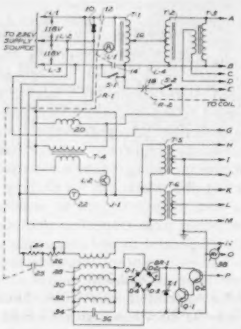
PROTECTIVE CIRCUIT FOR LIMITING THE INPUT POWER APPLIED TO AN X-RAY TUBE AND METHOD OF OPERATION

Norman A. Herrick, Mentor, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Continuation of Ser. No. 101,127, Dec. 23, 1970, abandoned. This application Jan. 31, 1973, Ser. No. 328,439

Int. Cl. H05g *1/60*

U.S. Cl. 250—401 **10 Claims**



1. An X-ray tube protective system for preventing the substantially instantaneous input power applied to an X-ray tube from exceeding a predetermined level and comprising:

first continuously variable circuit means for applying a voltage signal of a preselected value to an X-ray tube;

second continuously variable circuit means for applying a current signal of a preselected value to the X-ray tube;

voltage monitoring circuit means for developing a first signal having a value representative of the value of the applied voltage signal;

current monitoring circuit means for developing a second signal having a value representative of the value of the applied current signal;

multiplying circuit means coupled to said voltage monitoring circuit means and said current monitoring circuit means for developing an output signal having a value representative of the value of the power represented by the mathematical product of said first and second signals; compensating circuit means coupled to said multiplying circuit means for developing a control signal indicating when said output signal exceeds a predetermined value indicating the predetermined power level; and,

actuatable circuit means coupled to said compensating circuit means for, in response to said control signal, limiting the value of one of the current and voltage signals applied to the X-ray tube to a level sufficiently low to prevent input power in excess of said predetermined power level from being applied to said X-ray tube, while still permitting adjustment of the level of said limited signal within a range less than said sufficiently low level.

3,842,281

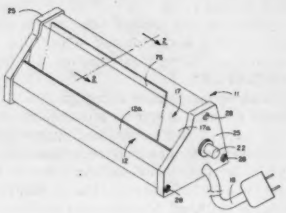
COUNTERFEIT DOCUMENT DETECTOR

Robert S. Goodrich, 27901 S. Golden Meadow Dr., Palos Verdes Peninsula, Calif. 90274

Filed Feb. 5, 1973, Ser. No. 329,456

Int. Cl. G01d *7/06*

U.S. Cl. 250—461 **4 Claims**



1. A device for checking the validity of a document comprising:

a casing having a first portion thereof shaped to form a light shield, and a second portion thereof shaped to form an easel for supporting a document to be examined,

an ultraviolet lamp mounted in said casing adjacent to and behind said light shield, said light shield having a part thereof which wraps around said lamp,

said easel portion extending at a slant angle from opposite said lamp away from the lamp to a line above the edge of the wrap-around part of said light shield, said light shield directing the light from said lamp towards said easel portion, and

means for selectively energizing said ultraviolet lamp,

whereby a document to be examined can be placed on said easel such that the bottom portions thereof lie opposite said lamp and shielded by said light shield to receive a substantial portion of the light output of the lamp, yet viewable from above.

3,842,282

CASSETTE FOR X-RAY PHOTOGRAPHY

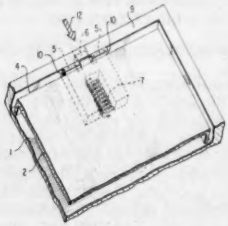
Noboru Shimoda, and Sadaaki Koba, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1973, Ser. No. 352,830

Claims priority, application Japan, Apr. 19, 1972, 47-39469

Int. Cl. G01n *21/34*

U.S. Cl. 250—468 **3 Claims**



1. In a cassette for X-ray photography comprising:

1. a body comprising a face and front, rear, and side edges integrally mounted thereon;

2. a cover hingedly mounted on the rear edge of said body; and
3. a latching mechanism for latching said cover in closed position on said body, the improvement wherein:
   a. said body has:
      i. a pair of latch grooves on the inside of the front edge;
      ii. a pair of wedge-shaped upper lips on the inside of the front edge, one of said pair of wedge-shaped upper lips being located above each of said pair of latch grooves; and
      iii. a guide opening located between the pairs of latch grooves and wedge-shaped upper lips, said guide opening extending clear through the front edge of said body and
   b. said latching mechanism comprises:
      i. a pair of latch members movably mounted on the front edge of said cover, said latch members being positioned so that one will cooperate with one of said pair of latch grooves and the other will cooperate with the other of said pair of latch grooves when said cover is in closed position, said latch members having wedge-shaped front edges shaped to complement said wedge-shaped upper lips;
      ii. a latch releasing member integrally connected to said latch members, said latch releasing member being positioned to cooperate with said guide opening when said cover is in closed position; and
      iii. biasing means urging said pair of latch members and said latch releasing member towards the front of said cover, whereby,
      when said cover is swung shut, said latch members will first be forced towards the rear of said cover against the urging of said biasing means by the contact of the wedge-shaped front edges of said pair of latch members with said pair of wedge-shaped upper lips and will then engage said pair of latch grooves after said latch members have passed said wedge-shaped upper lips and
      said cover may be opened by means of the insertion of an appropriate cover-opening means into said guide opening, forcing said latch releasing member, and thus said pair of latch members as well, towards the rear of said cover against the urging of said biasing means.

3,842,283

METHOD FOR DETERMINING THE PROPORTION OF BROKEN PARTICLES IN THE FUEL COMPACTS EMPLOYED IN HIGH TEMPERATURE REACTORS

Pierre Chenebault, Grenoble, and Marie-Louise Pointud, Seyssinet, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 30, 1973, Ser. No. 365,111
Claims priority, application France, June 7, 1972, 720494
Int. Cl. G01t *1/00*
U.S. Cl. 250—492 **9 Claims**

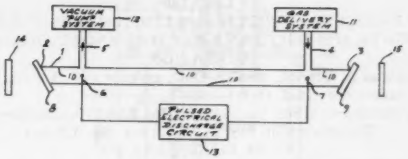
1. A method for determining the proportion of broken particles before, during and after irradiation in compacts which are formed in each case by a graphite matrix and by particles each consisting of a kernel of fissile material provided with a coating which is impervious to fission products, wherein said method consists in placing in a neutron flux the compacts to be tested and the reference compacts containing a known number of kernels of fissile material which are not provided with an impervious coating, in entraining in an inert gas stream or in a vacuum the fission gases which are released from the broken particles and from the uncoated kernels, in trapping said fission gases, in measuring the quantities of said gases by comparing the results obtained in the case of the reference compacts and in the case of the compacts to be tested and in deducing the proportion of broken particles therefrom.

3,842,284

RADIOACTIVE PREIONIZATION METHOD AND APPARATUS FOR PULSED GAS LASERS

Michael A. Berta, Altadena, Calif., and Claude R. Jones, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 15, 1972, Ser. No. 315,744
Int. Cl. H01s *3/00*
U.S. Cl. 250—493 **5 Claims**



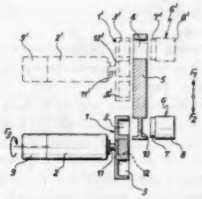
1. The method of radioactive preionization for a gas laser having a gas-laser active volume comprising locating a radioactive source exclusively in the region of said gas-laser active volume with continuous and permanent emissions therefrom creating a constant, uniform preionization in the laser gas, and pulsing an electrical discharge in said gas laser to produce a population inversion resulting in a laser pulse in response thereto.

3,842,285

METHOD AND A DEVICE FOR THE MECHANICAL MODULATION OF A PARTICLE FLUX

Jean-Claude Edeline, and Justin Lavergne, both of Orsay, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 11, 1973, Ser. No. 359,406
Claims priority, application France, May 19, 1972, 72.18201
Int. Cl. G21f *5/00*
U.S. Cl. 250—497 **5 Claims**

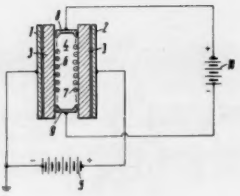


1. A method of mechanical modulation of a particle flux, comprising the steps of causing particle-emitting sources and non-emitting sources or dummy sources to move past periodically and in alternate sequence in front of the location receiving a modulated flux, and creating inhomgeneities by said dummy sources during the movement of said sources of the same type as those produced by said emitting sources but relatively displaced by one half-period.

3,842,286
APPARATUS FOR PRODUCING OZONE

Pavel Imris, Konigsbergerstrasse 4, D-3213 Eldagsen, Germany

Filed Dec. 8, 1972, Ser. No. 313,257
Claims priority, application Germany, Dec. 29, 1971, 2165249
Int. Cl. C01b *13/12*
U.S. Cl. 250—535 **5 Claims**



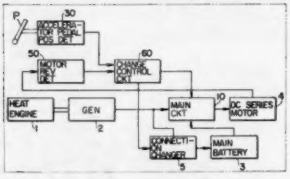
1. An apparatus for producing ozone from an oxygen-containing gas, comprising

1. a first pair of spaced electrodes of opposite polarity,
2. a first high voltage source connected to the electrodes of the first pair to establish an electrical discharge between the electrodes of the first pair,
3. a second pair of spaced electrodes of opposite polarity each covered with a dielectric layer, and
4. a second high voltage source connected to the electrodes of the second pair,
   a. the electrodes of the first and second pairs defining a channel of passage for the oxygen-containing gas and the dielectric layers each having a surface in the channel and in the path of the electrical discharge between the electrodes of the first pair to convert oxygen into ozone.

3,842,287
HYBRID ELECTRIC CAR

Kazumasa Nakamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed June 11, 1973, Ser. No. 368,483
Claims priority, application Japan, June 12, 1972, 47-57679
Int. Cl. B60l *11/02*
U.S. Cl. 290—16 **12 Claims**

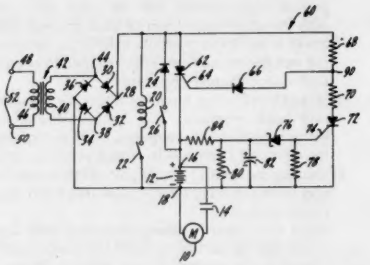


1. A hybrid-type electric power drive apparatus for a vehicle having an accelerator pedal, comprising a heat engine, a generator driven by said heat engine, a main battery, coupling means between said battery and said generator and changeable between one condition connecting said battery and said generator in parallel so that said generator charges said battery and a second condition connecting said generator and said battery in series, main circuit means for controlling the power from said battery and said generator, a DC motor for driving the vehicle with power from said main circuit means, detecting means for detecting the degree to which the accelerator pedal is depressed and for detecting the current supplied to the motor as well as the speed of the motor, and ratio control circuit means responsive to said detecting means and said main circuit means and coupled to said coupling means for controlling the connection between said battery and said generator by changing the coupling means between one condition and the other in response to the degree of depression of the accelerator pedal and the motor speed.

3,842,288
BLOWER MOTOR CONTROL CIRCUIT

Darrell L. Bradshaw, Norridge, Ill., assignor to Dole Refrigerating Company, Chicago, Ill.

Filed Oct. 25, 1973, Ser. No. 409,715
Int. Cl. H02j *7/00*
U.S. Cl. 307—10 R **7 Claims**



1. In a control circuit for operating a DC blower motor in a refrigerated vehicle or the like having a vehicle battery as a DC source for the blower motor,

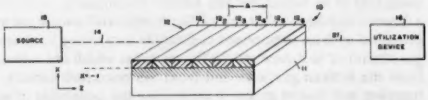
blower energizing means for controlling the application of the vehicle battery to the blower motor, charging control means for rectifying and applying an external AC supply voltage to the vehicle battery to maintain a predetermined charging condition, and vehicle ignition switch means,

said blower energizing means including control switch means and a relay, said relay including a coil and a pair of relay contacts, said relay contacts being connected to control the application of the vehicle battery to the blower motor, said relay coil being connected in series combination with said ignition switch means, the vehicle battery and said control switch means, said relay contacts energizing the blower motor when said ignition switch means and said control switch means are closed.

3,842,289
THIN FILM WAVEGUIDE WITH A PERIODICALLY MODULATED NONLINEAR OPTICAL COEFFICIENT

Ammon Yariv, and Sasson R. Somekh, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 18, 1973, Ser. No. 361,536
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 **12 Claims**



1. A parametric device including:

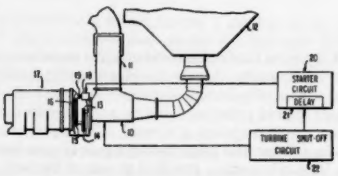
a non-uniform nonlinear thin film waveguide supportive of

electromagnetic wave energy having angular frequencies ω_1, ω_2 and ω_3 where $\omega_1 + \omega_2 = \omega_3$, said waveguide comprising a substrate defining a top surface and at least a first group of spaced apart strips of a first material in a form having a nonlinear optical coefficient on the top surface of said substrate, each strip having a length d_a in the direction of energy propagation, with adjacent strips of each said first group being spaced apart a distance d_b, where $d_a + d_b = \Lambda$ and $\Lambda = 2\pi/\Delta\beta$, $\Delta\beta$ being the phase difference required to satisfy the phase relationship $\beta_1 + \beta_2 = \beta_3 + \Delta\beta$ and β_1, β_2 and β_3 are to a first order of approximation, the phase constants respectively of said wave energy, the indicies of refraction of said strips and said substrate being definable as n_2 and n_3 where $n_2 < n_3$.

3,842,290
PROTECTION SYSTEM FOR TURBO-GENERATOR STARTERS

Andre E. Pelabon, Paris, France, assignor to ANF Frangeco S.A., Courbevoie, Hauts de Seine, France

Filed Apr. 13, 1973, Ser. No. 350,815
Int. Cl. H02b 1/00
U.S. Cl. 307—116 **8 Claims**



1. A protective system for the electric starter means of a gas turbine engine which is directly coupled to an electrical generator, said gas turbine engine being of the type wherein starting is accomplished by a first sequence of operations which includes the energization of an electrical starting motor for engaging a pinion with gearing connected with a turbine shaft, the engagement to be accomplished only when the turbine engine is stopped or running at less than a predetermined speed, and stopping of the turbine is accomplished by a second sequence of operations, circuit means including first manually operable switch means for initiating said first sequence of operations, second manually operable switch means for initiating said second sequence of operations, said circuit means including control means responsive to operation of said second switch means for preventing initiation of said first sequence of operations by said first switch means unless said turbine engine is in a condition for engagement of said pinion with said gearing.

ERRATUM

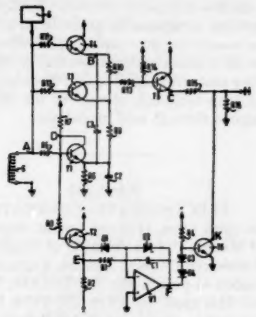
For Class 307—228 see:
Patent No. 3,842,310

3,842,291
CIRCUIT FOR THE SUPPRESSION OF INTERFERENCE PULSES

Albert Maringer, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 13, 1973, Ser. No. 369,533
Claims priority, application Germany, June 16, 1972, 2229493
Int. Cl. H03k 1/10
U.S. Cl. 307—236 **7 Claims**

1. An interference suppression system comprising:
a sensing device which periodically produces a first occurring full wave consisting of a positive halfwave portion and a negative halfwave portion;
a trigger circuit coupled to said sensing device and responsive to only the first occuring halfwave portion of said positive and negative halfwave portions of said first occuring full wave;
said circuit comprising:
a. a first switching transistor responsive only to the halfwave portion of polarity opposite to that of said first occuring halfwave;

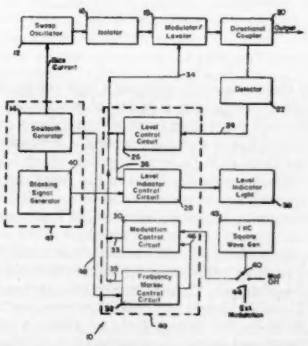


b. an integrator having an input connected to the output of said first switching transistor; and
c. a second switching transistor connected between the output of said integrator and said trigger circuit output to short-circuit the output of the trigger circuit for the duration of said integrator output thereby suppressing interference pulses that would otherwise be generated as a result of said interference signals.

3,842,292
MICROWAVE POWER MODULATOR/LEVELER CONTROL CIRCUIT

Hiromu John Kuno, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 4, 1973, Ser. No. 367,075
Int. Cl. H03b 3/04
U.S. Cl. 307—271 **18 Claims**



1. Circuitry for sweeping the frequency of a solid state diode type oscillator through a predetermined frequency range while simultaneously controlling the amplitude of microwave or millimeter wave power generated by said oscillator, said circuitry including in combination:

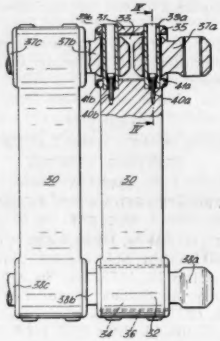
a. a waveguide modulator electrically coupled to said oscillator and having a control winding thereon for receiving bias currents for varying the attenuation of microwave power passing therethrough,
b. detection means coupled to said waveguide modulator and providing a detection voltage proportional to the level of microwave power propagated through said waveguide modulator,
c. differential amplifier means having one input thereof connected to said detection means for receiving said detection voltage and the other input thereof connected to a variable threshold reference voltage, whereby said voltages are compared to generate an error signal, and
d. means connecting the output of said differential amplifier means to a point on said control winding for thereby coupling said error signal to said modulator and providing closed loop feedback control of the microwave power propagated through said modulator.

3,842,293

ELECTROSTATIC GENERATOR

William Douglas Allen, Quirang Burcot, near Abingdon, and Michael Morris, Frodsham, both of England, assignors to Science Research Council, London, England

Continuation-in-part of Ser. No. 297,838, Oct. 16, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,955
Claims priority, application Great Britain, Oct. 28, 1971, 50287/71
Int. Cl. H02n *1/00*
U.S. Cl. 310—6 **7 Claims**



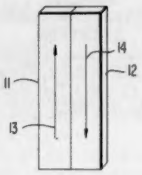
1. For electrostatically charging a high voltage terminal, the combination comprising a series of electrically conductive members each presenting front and rear faces extending between lateral edges and each having a dimension measured across the faces in the lateral direction which is greater than that measured across the faces in the other direction, hinge means situated symmetrically relative to the lateral edges to form electrically insulating mechanical interconnections between each pair of consecutive members in the series thereby to link the members in an endless chain, said hinge means allowing rocking articulation normal to the faces of the members and maintaining them in an edge to edge spaced relationship in a manner similar to a caterpillar track, a first induction electrode means for charging the members, a second induction electrode means for the transfer of charge from the members to the high voltage terminal, at least two pulley assemblies defining a path of travel of the endless chain from the first electrode means to the second electrode means, each pulley assembly being adapted to make tracking engagement with the endless chain along spaced apart track lines, and the first and second induction electrode means comprising electrodes presented towards the rear faces of the members, as well as electrodes presented towards the front faces, the former being situated between the pulley means of the pulley assemblies.

3,842,294

ELECTROMECHANICAL TRANSDUCER COMPRISING A PAIR OF ANTIPARALLEL POLED RECTANGULAR PIEZOELECTRIC CERAMIC PIECES

Kikuo Doi, and Takehiro Futami, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 7, 1973, Ser. No. 413,718
Claims priority, application Japan, Nov. 8, 1972, 47-112359
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.5 **5 Claims**



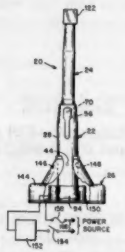
1. A torsional mode electromechanical transducer including a first substantially rectangular piezoelectric ceramic piece having a pair of principal surfaces and a pair of electrodes attached to said principal surfaces, respectively, wherein the improvement comprises a second substantially rectangular piezoelectric ceramic piece having a pair of principal surfaces and a long side surface attached to one of the long side surfaces of said first ceramic piece, the principal surfaces of said first and second ceramic pieces forming common principal surfaces, said first and second ceramic pieces being poled substantially longitudinally and antiparallel, said electrodes being attached also to the respective principal surfaces of said second ceramic piece.

3,842,295

SINGLE STROKE TOOL AND MEANS FOR STORING ENERGY THEREIN

Norman R. Doherty, 870 Main St., Farmingdale, N.Y. 11735

Filed Aug. 10, 1972, Ser. No. 279,643
Int. Cl. H02k *41/00*
U.S. Cl. 310—12 **4 Claims**



1. The combination of a single stroke tool having an axially displaceable magnetizable core, a housing having a bore therein, a coil-like member positioned within said housing concentrically with said bore and arranged to removably receive said magnetizable core, said coil-like member being adapted to be connected to a source of electrical energy and switch means connected in series with said coil-like member.

3,842,296

ADJUSTABLE ROTATION-CONTROLLING DEVICE FOR SYNCHRONOUS MOTOR

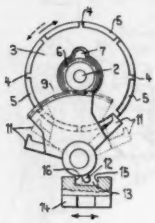
Hermann Gerber, Courgevaux, Switzerland, assignor to SAIA A.G. Fabrik elektrischer Apparate, Canton of Fribourg, Switzerland

Filed June 19, 1973, Ser. No. 371,383

Claims priority, application Switzerland, June 30, 1972, 9820/72

Int. Cl. H02k 7/10

U.S. Cl. 310—41 14 Claims



1. In a synchronous motor having a locking device acting onto the rotor, wherein said device is adjustable into two operating positions, running of the rotor in one of its rotating directions being locked for each of said operating positions of the locking device, the improvement wherein said rotor has a locking toothing uniformly distributed round its circumference and for each operating position a locking member is coupled by torque transmitting means with the rotor and is capable of being rotated into a locking position in engagement with said locking toothing by rotation of the rotor in one of its rotating directions.

3,842,297

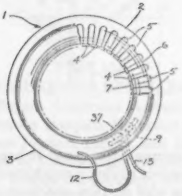
RECEPTACLE FOR SECURING A SENSING ELEMENT WITHIN ELECTRICAL WINDINGS

Bernard J. Pleiss, Jr., Dayton, and Theodore J. Surmacz, Troy, both of Ohio, assignors to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 241,775, April 6, 1972, abandoned. This application Mar. 1, 1973, Ser. No. 337,074

Int. Cl. H02k 11/00

U.S. Cl. 310—68 C 14 Claims



1. In a receptacle adapted for insertion within electrical windings to secure a sensing element therein and insulate the element from the windings, comprising

a sheet-like flexible material disposed in a folded position to provide oppositely lo ated first and second portions laterally extending with respect to each other, said first portion including first and second spaced folds adjacent the outer end thereof and a pair of spaced openings each adapted to receive the sensing element, said first and second folds defining an outer portion, an intermediate portion, and an inner portion with said outer portion folded at said first fold upon said intermediate portion, said intermediate portion folded at said second fold and positioned opposite to said second portion with said outer portion positioned opposite to said inner portion of said first portion so that the pair of spaced openings becomes aligned to receive the sensing element.

3,842,298

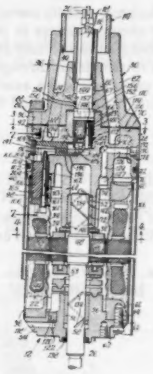
SUBMERSIBLE ELECTRIC MOTOR

Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Apr. 6, 1973, Ser. No. 348,766

Int. Cl. H02k 5/12

U.S. Cl. 310—87 16 Claims



1. In an electric motor adapted to be suspended from the lower end of a liquid carrying pipe with an electric power cable for the motor extending within the pipe, the improvement of an end bell member for the motor comprising a generally transversely extending wall portion, means on the upper end of said wall portion adapted to be connected to an adaptor which is secured to the pipe, said wall portion further being adapted to be secured to the stator of said motor, bearing support means formed on the underside of said wall portion for supporting a bearing of the motor, electrical connector means fastened to the upper side of said wall portion and forming a detachable electrical connection with said cable, electrical conductor means connected to said connector means and extending through said wall portion and adapted to be connected to windings of said motor stator, and said wall portion having a passage therethrough permitting pumped liquid to flow upwardly from a passage in the motor to the interior of said pipe.

3,842,299

DEVICES FOR SENSING THE SPEED AND POSITION OF AN ENGINE FLYWHEEL

Glaude Edmond Lombard, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

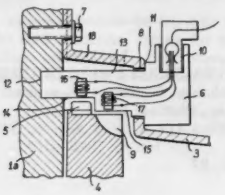
Filed Apr. 30, 1973, Ser. No. 355,423

Int. Cl. H02k 19/20

U.S. Cl. 310—168 3 Claims

1. A speed and position sensing device mounted in a casing in front of the flywheel of an internal combustion engine having a crankcase, said flywheel having on one side of its periphery a plurality of projections constituting a first kind of

abrupt changes in the periphery and on the other side of its periphery at least one other kind of abrupt change, and the sensing device comprising at least two sensing members preferably of the variable reluctance type, said device comprising a body having at least two active portions each enclosing a respective one of said at least two sensing members, each of

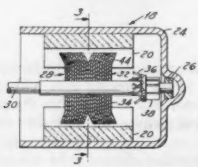


said portions being located radially outwardly of a respective one of said kinds of abrupt changes in the periphery of said flywheel and being parallel to the axis of said flywheel, said body being adapted to penetrate through holes into at least one casing fixed to said engine, the axes of said holes being parallel with the axis of rotation of said flywheel.

3,842,300
LAMINATED ROTOR STRUCTURE FOR A DYNAMOELECTRIC MACHINE

Theodore W. Daykin, Dearborn, and Anthony S. Ryff, St. Clair Shores, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1973, Ser. No. 356,000
Int. Cl. H02k *1/00*
U.S. Cl. 310—216 **18 Claims**

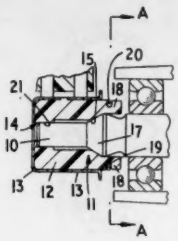


1. A dynamoelectric machine comprising a housing, an armature rotatably received within said housing, means for producing a magnetic field positioned about said armature and coupled to said housing, said armature comprising a stack of closely axially spaced laminated members, each member comprising a substantially circular core section and having a plurality of generally outwardly directed finger elements, the members of the stack being arranged so that the finger elements of adjacent members are axially aligned as a winding receiving portion, each finger element including a flux collecting portion at its radially remote free end whereby the flux collecting portions are positioned adjacent said magnetic field producing means, said armature further comprising means defining armature windings spaced in proximity to the core sections of the lamination members, said armature windings comprising at least one electrical conductor extending in a first axial direction between the first pairs of radially adjacent aligned finger elements and in an opposite axial direction between second pairs of radially adjacent finger elements, the axial length of the stack of laminations at the flux collecting portion is substantially greater than the axial length of the stack of laminations at the winding receiving portion.

3,842,301
SLIP RING ASSEMBLIES FOR ROTARY ELECTRIC MACHINES

Roger Victor Frederick Smith, Great Barr, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Dec. 28, 1973, Ser. No. 429,289
Claims priority, application Great Britain, Jan. 23, 1973, 3391/73
Int. Cl. H01r *39/14*
U.S. Cl. 310—232 **8 Claims**

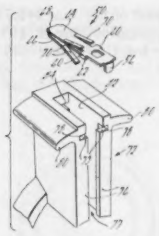


1. A slip ring assembly for a rotary electric machine, comprising an electrically insulating body, a pair of slip rings carried on the body, in spaced relationship, said body having an axial bore therein adapted to receive one end of a rotor shaft of a rotary electric machine, and resilient clip means carried by said body and adapted to engage, in use, behind a shoulder on said rotor shaft.

3,842,302
ELECTRICAL SNAP-IN TERMINAL AND BRUSH HOUSING AND METHOD OF ASSEMBLY

Theodore G. Apostoleris, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1973, Ser. No. 362,628
Int. Cl. H01r *39/38*
U.S. Cl. 310—239 **11 Claims**



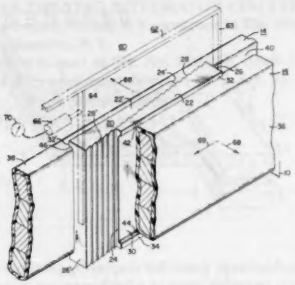
1. An electrical terminal for a snap-in brush box comprising a unitary blade member having a conductor receiving portion and a brush biasing wall portion, the blade member having a longitudinal dimension and a width dimension with the conductor receiving portion and the brush biasing wall portion being longitudinally separated, the conductor receiving portion having a width dimension larger than the width dimension of the brush biasing wall portion, the brush biasing wall portion including a plurality of finger elements longitudinally directed toward the conductor receiving portion and having free ends extending away from the brush biasing wall portion in proximity to the conductor receiving portion and arranged to be on opposite sides of the blade member so that the free ends of a portion of the finger elements are directed generally away from the free ends of the other finger elements.

3,842,303

STATOR COIL BRACING

Leonard B. Simmonds, Monroeville, and Charles R. Ruffing, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1973, Ser. No. 352,815
Int. Cl. H02k 3/46
U.S. Cl. 310—260 7 Claims



1. A stator for dynamoelectric apparatus,

said stator having a plurality of spaced coil slots therein, a plurality of electrical conductors disposed in said spaced coil slots, said electrical conductors having spaced end turn portions projecting beyond the ends of said coil slots, and, means for rigidly supporting said end turn portions, said means comprising a first and a second bracing member disposed in the space between adjacent end turn portions of said electrical conductors, said first bracing member and said second bracing member each having a toothed notch therein,

said first and said second bracing members being displaceable relative to said electrical conductors to engage said notch on said first bracing member with said notch on said second bracing member,

the engagement of said first bracing member and said second bracing member providing a self-locking relationship between said first bracing member and said second bracing member, said first and said second bracing member exerting a predetermined force on the electrical conductors abutting said engaged first bracing member and said second bracing member.

3,842,304

HIGH-PRESSURE GAS DISCHARGE LAMP

Louis Benjamin Beyer; Gerardus Antonius Petrus Maria Cornelissen; Antonius Jozephus Gerardus Cornelis Driessen; Cornelis Adrianus Joannes Jacobs, and Gerardus Henricus Maria Siebers, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,905
Claims priority, application Netherlands, May 16, 1972, 7206559
Int. Cl. H01j 61/52
U.S. Cl. 313—44 7 Claims

1. In a high-pressure gas discharge lamp comprising a discharge vessel provided with materials which during operation of the lamp are present in a gaseous and/or vapor state, at least one of said materials during operation of the lamp supplying a saturated vapor, said lamp provided with an electrode placed at one end of the discharge vessel, the discharge vessel at said end being provided with an external coating, said coating consisting of a first film located on the wall of the discharge vessel and comprising a black or dark-grey material having a high melting point and a low vapor pressure, and of

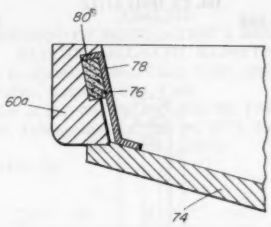
a second film located on the first film and comprising a white or substantially white material having a high melting point and a low vapor pressure.

3,842,305

X-RAY TUBE ANODE TARGET

Martin Braun, Stamford, Conn., assignor to The Machlett Laboratories Incorporated, Stamford, Conn.

Continuation of Ser. No. 320,804, Jan. 3, 1973. This application Jan. 2, 1974, Ser. No. 429,611
Int. Cl. H01j 35/10
U.S. Cl. 313—60 18 Claims



1. An X-ray tube comprising an envelope, an anode structure rotatably supported in one end of the envelope, a cathode structure supported in the opposite end of the envelope, said anode structure including an axially extending shaft, a cup-shaped target carried by said shaft for rotation therewith, said target comprising a connecting portion secured to the shaft, a wall portion extending axially from the periphery of the connecting portion, and a focal track ring disposed on the inner surface of said wall portion, the cathode structure including an electron-emitting device disposed to emit an electron beam toward said focal track ring, said wall portion being of a material having heat storage capacity per unit weight greater than that of the material from which the focal track ring is formed, and an intermediate ring disposed between said wall portion and said focal track ring.

3,842,306

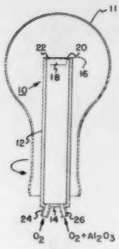
ALUMINA COATINGS FOR AN ELECTRIC LAMP

David C. Henderson, Chagrin Falls, and Kenneth M. Maloney, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed June 21, 1973, Ser. No. 372,069
Int. Cl. H01k 1/32
U.S. Cl. 313—116 11 Claims

1. A light diffusion coating for an electric lamp which comprises a thin layer of vapor-formed spherical alumina particles

having an individual particle size range from approximately 400 A to 5,000 A in diameter, said layer scattering at least 99



percent of the incident visible radiation with minor lumen loss when deposited directly upon the clear internal surface of the lamp glass envelope.

3,842,307

HIGH PRESSURE MERCURY VAPOR DISCHARGE LAMP WITH METAL HALIDE ADDITIVES

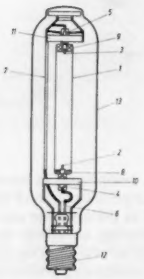
Alexander Dobrusskin, and Helmut Leyendecker, both of Trufkirchen, Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Continuation of Ser. No. 224,708, Feb. 9, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,609

Claims priority, application Germany, Feb. 11, 1971, 2106447

Int. Cl. H01j *61/12*

U.S. Cl. 313—184 **13 Claims**



1. A high pressure mercury vapor discharge lamp comprising

a quartz glass discharge tube;

electrodes of refractory metal protruding into the discharge tube and spaced by a distance which is a multiple of the discharge tube diameter;

an envelope surrounding the discharge tube; metal halides and an inert gas as additive fill to the mercury, contained in the discharge tube;

the improvement wherein

the discharge tube contains halides of at least three elements which have essentially similar median excitation energy, and which comprise dysprosium and at least two other rare earth metals, said dysprosium and at least two other rare earth metals being present in a total amount of from 0.3 to 1.2 mg/cm of arc length which during operation of the lamp provide a saturated vapor pressure and a wall loading of between 8 and 20 W/cm^2.

3,842,308

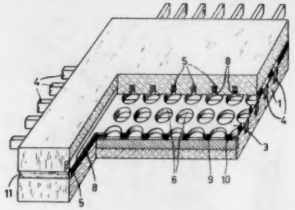
GAS DISCHARGE PANEL WITH APERTURED CENTER PLATE HAVING AN OXIDIZED SURFACE

Johannes Van Esdonk, and Jacobus Hubertus Jacobs, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 204,460, Dec. 3, 1971, abandoned. This application July 26, 1973, Ser. No. 382,896

Int. Cl. H01j *61/35*

U.S. Cl. 313—188 **4 Claims**



1. A gas discharge panel for displaying pictures comprising a base plate, an upper plate of a light-pervious material and an intermediate plate having a thickness less than 0.5 mm hermetically sealed between said upper and base plates, said intermediate plate having a plurality of apertures therein filled with an ionizable gas and consisting of a metal covered with an adherent oxide layer having a thickness which is between 10 and 50 percent of that of the metal whereby the coefficient of thermal expansion is determined by the oxide layer to substantially match those of the upper and base plates, and a plurality of strip-shaped electrodes between each of the intermediate plate and base and upper plates respectively and electrically insulated from the intermediate plate, said electrodes each extending over a number of the apertures in the intermediate plate.

3,842,309

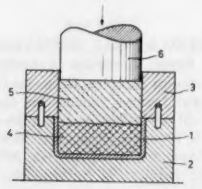
METHOD OF MANUFACTURING A STORAGE CATHODE AND CATHODE MANUFACTURED BY SAID METHOD

Antonius Johannes Alberta Van Stratum; Franciscus Johannes Verest, and Wilhelm Ernst Paul Parchen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 88,643, Nov. 12, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,864

Int. Cl. H01j *1/14, 19/06, 19/06*

U.S. Cl. 313—346 DC **8 Claims**



1. A method of manufacturing a storage cathode comprising the steps of

a. providing a holder defining a cavity portion;

b. forming in said cavity portion a first layer comprising a loose mixture of coarse and fine granulated particles containing electron emissive material, only one of said coarse and fine granulated particles comprising a reducing agent;

c. depositing on said first layer a second layer consisting essentially of loose particles of refractory metal;
d. compressing at least said first and second layers simultaneously in said holder, and, then,
e. heating the compressed said layers at a temperature below the fusion temperature of said electron emissive material, thereby to sinter said layers and form a unitary body of porous said first and second layers in said holder.

3,842,310

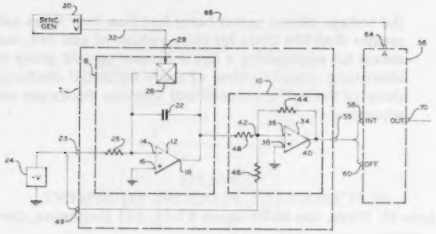
MULTIPLYING INTEGRATOR CIRCUIT

Kenneth Gert Harf, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 130,076, April 1, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 308,248

Int. Cl. H01j *29/70*

U.S. Cl. 307—228 **6 Claims**



1. Included in apparatus for continuously generating a raster on the viewing surface of a CRT wherein first and second repetitive sweep signals direct the electron beam of said CRT along two mutually perpendicular dimensions of said viewing surface such that for each raster generated a plurality of spaced parallel lines are traced across said viewing surface, said parallel lines being traced in response to a series of said first sweep signals and said spacing of said lines being in response to a single one of said second sweep signals; circuitry for providing a correction signal suitable for adjusting selected ones of the sweep signals, said correction signal being proportional to the product of a selected uncorrected sweep signal and a selected power of a selected uncorrected sweep signal comprising:

pulse means for providing sync pulses, each sync pulse corresponding to a single sweep of one of said repetitive sweep signals;

means for providing an input signal proportional to a selected one of an uncorrected repetitive sweep signal raised to a selected power; and

integrating means for integrating said input signal during the time period between two successive sync pulses for producing an output signal from said integrating means corresponding to the product of said input signal and an uncorrected sweep signal for which said sync pulses correspond, said output signal suitable for use as a correction signal for selected sweep signals.

3,842,311

S-CORRECTED VERTICAL DEFLECTION CIRCUIT

James D. Knox, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 8, 1973, Ser. No. 321,850

Int. Cl. H01j *29/70*

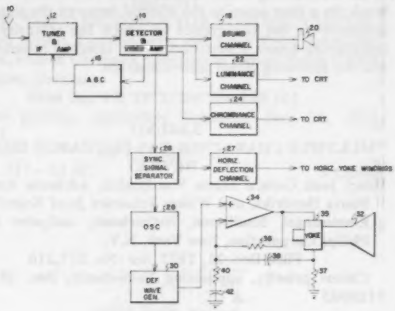
U.S. Cl. 315—27 TD **6 Claims**

1. In a television receiver having a cathode ray tube with vertical deflection windings for sweeping an image across the face of said cathode ray tube in a vertical direction, a vertical deflection drive circuit comprising:

deflection wave generating means for generating a linear recurrent deflection wave of given frequency,

an amplifier for applying said recurrent deflection wave to said vertical deflection windings in modified form,

first feedback means responsive to deflection winding current to degeneratively control the transfer characteristic



of said amplifier so that an S-shaped characteristic is imparted to said recurrent deflection wave, and

second feedback means responsive to the voltage output of said amplifier to further degeneratively control the transfer characteristic of said amplifier and modify the effect of said first feedback means.

3,842,312

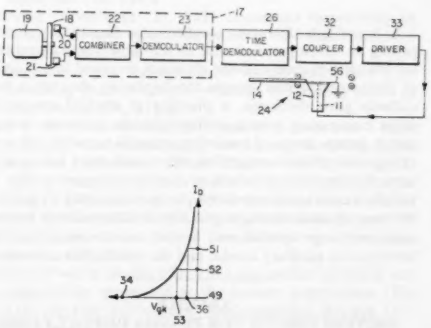
METHOD OF MODULATING A BEAM OF ELECTROMAGNETIC RADIATION

Lawrence D. Emmons, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Division of Ser. No. 800,990, Feb. 20, 1969, Pat. No. 3,745,408. This application June 26, 1972, Ser. No. 266,180

Int. Cl. H01j *29/52*

U.S. Cl. 315—30 **3 Claims**



1. Method of modulating a beam of electromagnetic radiation for transducing intelligence signals including varying information related components transmitted through a transmission path having a particular transfer characteristic comprising the steps of generating a time modulated signal having spaced signal state transitions defining intervals which carry the intelligence signal information, varying the intervals in accordance with the varying information related component

of the intelligence signal in a selected functional relation productive of a transfer characteristic which is compensatingly matched to that of the remainder of the transmission path, switching the intensity of the transducing beam alternately between two selected intensity levels at the occurrence of consecutive signal state transitions to thereby effect modulation of the transducing beam, and maintaining the intensity of the transducing beam at each of the two selected intensity levels for a time equal to the interval between the signal state transition at the occurrence of which the intensity of the transducing beam is switched to the selected intensity level and the following signal state transition.

3,842,313
MULTIPLE CHARACTER GAS DISCHARGE DISPLAY DEVICE

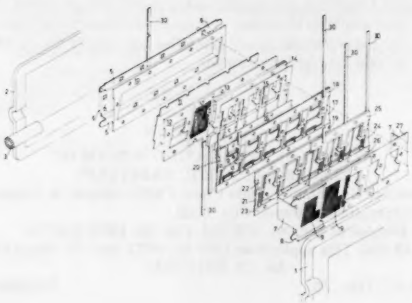
Henri Jean Gerard Marie Van Daelen; Adrianus Anthonius Maria Hendriks, and Willem Johannes Jozef Koteris, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,216

Claims priority, application Netherlands, Dec. 28, 1971, 7118003

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **6 Claims**



1. A multiple-character gas discharge display device comprising an envelope filled with an ionizable gas, a plurality of narrow strip-shaped cathode elements arranged in a plurality of juxtaposed matrix groups for displaying characters by a cathode glow discharge, a plurality of stacked connection strips connecting corresponding cathode elements in each matrix group, strips of insulating material between and separating said cathode connection strips, said strips having apertures therein through which said cathode matrix groups are visible, a continuous conductive strip constituting an anode at the base of said stacks, a grid-like auxiliary anode between each matrix group and said anode, and an insulation strip between the auxiliary anodes and the conductive strip anode.

3,842,314
DRIVING CIRCUIT FOR PLASMA DISPLAY PANEL COMPRISING MEANS FOR PLACING PEDESTAL ON ALTERNATING FIRING PULSES

Tsunekiyo Iwakawa, and Akira Yano, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 30, 1973, Ser. No. 328,055

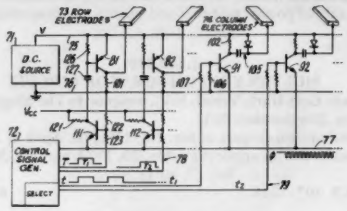
Claims priority, application Japan, Feb. 4, 1972, 47-13016

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **2 Claims**

1. For a discharge display apparatus including a coplanar array of similar gas discharge cells and first and second pluralities of electrodes external to said cells arranged so that each cell is interposed between an electrode of said first plurality and an electrode of said second plurality, a driving circuit comprising:

generating means for supplying a group of alternating polarity pulses to the electrodes associated with a selected cell,



the voltage of said pulses being less than four times and greater than two times for firing voltage of said cell; and means for superposing a direct current on said group of alternating polarity pulses whereby the initial discharge delay of the cell is reduced and spurious discharges are prevented.

3,842,315
ELECTROSTATIC FLOCKING EQUIPMENT

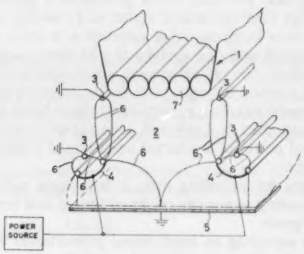
Arno H. Wirth, Am Heilbrunnen 67-75, 741 Reutlingen, Germany

Filed Dec. 27, 1972, Ser. No. 318,850

Claims priority, application Germany, Dec. 29, 1971, 2165387

Int. Cl. B05b *5/02*

U.S. Cl. 317—3 **9 Claims**



1. An electrostatic flocking equipment comprising, in combination: a dosing system for dispensing flocks; an electrode system disposed between said dosing system and a product to be flocked, said electrode system being laterally disposed with respect to a substantially central flocking zone through which the flocks pass, and including at least one pair of main electrodes to which a potential is being applied, and at least one pair of grounded control electrodes; means for applying an electrostatic charge to the flocks dispensed from said dosing system, thereby to accelerate them toward the product which is grounded; and means behind the flocking zone, when viewed in the direction of flocking from said dosing system toward the product, for introducing a stray field into the flocking zone, and for bundling the flocks as they pass from said dosing system to the product; wherein the distance between said main electrodes and the product is smaller than that between the same electrodes and said dosing system; the

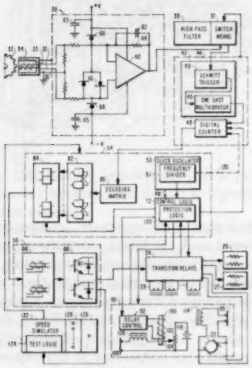
flocking zone being kept substantially free from the electrostatic charge, thereby avoiding chain and streak formations on the finished flocked product.

3,842,316

TRANSITION PROGRAMMER

Peter A. Godinez, West Covina, and Robert R. Shepard, Lakewood, both of Calif., assignors to Genisco Technology Corporation, Compton, Calif.

Filed Dec. 6, 1972, Ser. No. 312,644
Int. Cl. H02p 5/28
U.S. Cl. 317—5 8 Claims



1. A transition programmer, for use in a locomotive having a plurality of electric traction motors and energy means for providing power to said traction motors, said energy means having current and voltage limitations, comprising:

sensing means for generating a waveform having a digital component corresponding to a rotational speed developed by at least one of said traction motors;

digital signal processing means coupled to said sensing means for selectively energizing relay means in response to said digital component comprising:

count preparation means;

count means for developing a digital representation corresponding to a speed of said electric traction motors in a given time interval, said count preparation means isolating and compatibly coupling said digital component to said count means; and

programming means responsive to said signal processing means energizing relay means at selected times in accordance with the digital count representation; relay means coupled to said processing means for selectively engaging a combination of circuit elements for providing an optimal power to said electric traction motors within said limitations of said energy means; and

delay means for decoupling said transition relays from said energy means during transitioning comprising:

variable impedance means coupled to a power source and an excitation coil of the energy means for varying the current through said excitation coil;

solenoid means coupled to said programming means and to said variable impedance means for reducing the current through said excitation coil prior to transitioning; and

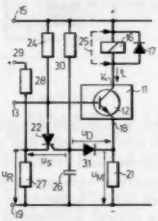
delay relay means coupled to said excitation coil for dropping the voltage across said excitation coil prior to transitioning.

3,842,317

PROTECTED SEMICONDUCTOR CONTROL CIRCUIT

Bernhard Mattes, Ludwigsburg, and Erich Feigl, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 16, 1972, Ser. No. 298,101
Claims priority, application Germany, Dec. 24, 1971, 2164572
Int. Cl. H02h 7/20
U.S. Cl. 317—33 SC 3 Claims



1. An overcurrent protected semiconductor control circuit for a plurality of simultaneously controlled apparatus comprising, in combination:

a plurality of controllable semiconductor devices (11, 111) each having a controlled path connected in series with a controlled apparatus (16, 116) and a controlling path at one end of which is a control electrode;

connections (13, 113) to the respective control electrodes of said semiconductor devices (11,111) for application of control signals for normally controlling the respective apparatus (16, 116);

sensing impedences (21, 121) connected respectively in series with said controlled paths of said semiconductor devices (11, 111);

a normally open semiconductor switch (22) having a switching path in parallel with the controlling paths of said devices (11, 111);

a first set of diodes (32, 132) associated on a 1 to 1 basis with said controllable semiconductor devices (11, 111), with the cathodes of all said dides of said first set (32, 132) connected to the anode of said semiconductor siwtch (22), while the respective anodes of said diodes of said first set (32, 132) are connected to the respective base connections of said controllable semiconductor devices (11, 111);

a second set of diodes (37, 137) the anodes of which are respectively connected to the emitter connections (18, 118) of said controllable semiconductor devices (11, 111); and

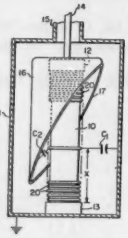
a voltage divider (34, 36) connected at one end to a common connection of the cathodes of said diodes (37, 137) of said second set of diodes and its other end connected to a negative voltage point of the circuit and with its tap connected to the control electrode of said semiconductor switch (22),

whereby said semiconductor switch (22) is arranged to shortcircuit the controlling paths of said semiconductor devices (11, 111) in response to a magnitude of current exceeding a predetermined magnitude in any of said sensing impedences (21, 121).

3,842,318
SHIELDED METAL ENCLOSED ELECTRICAL EQUIPMENT

Tohei Nitta, Amagasaki, Japan, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 296,716, Oct. 11, 1972, abandoned. This application June 19, 1973, Ser. No. 371,446
Int. Cl. H02h 9/06
U.S. Cl. 317—62 7 Claims

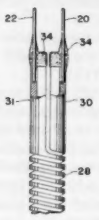


1. In combination, a grounded metal enclosure, an electrical device enclosed in said enclosure and adapted to have a high voltage applied thereto, said enclosure containing an insulating gas, an asymmetrical conducting shield at least partially surrounding said device to control the voltage distribution to ground across the device, and means encircling the device inside said shield to maintain a symmetrical field within the device.

3,842,319
GAS IGNITER

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Continuation-in-part of Ser. No. 223,451, Feb. 4, 1972, abandoned. This application Sept. 18, 1972, Ser. No. 290,256
Int. Cl. F23q 7/00
U.S. Cl. 317—98 5 Claims

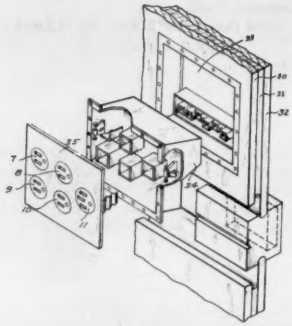


1. The improvement in high temperature gas igniters having discrete spaced-apart terminal parts for connection to a source of electric energy, which comprises a plurality of electrical leads positioned in conductive engagement with respective ones of said terminal parts, said electrical leads extending from said terminal parts for such connection of the igniter and said electrical leads being of low electrical resistance relative to that of the igniter, and respective metallized coatings having a coefficient of expansion approximating that of the terminal parts about the respective leads and terminal parts in such conductive engagement bonding the former to the latter respectively, while maintaining the spaced and hence electrically insulated relation thereof.

3,842,320
PREFABRICATED INSULATED WALL WITH ELECTRICAL CIRCUIT COMPONENTS HOUSED THEREIN

Casper Kiesling, Glendale, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 8, 1973, Ser. No. 386,713
Int. Cl. H02b 1/04; H05k 7/06
U.S. Cl. 317—99 4 Claims



1. A prefabricated wall structure, comprising electrical insulation material and electrical circuitry supported by the insulation material in mutually insulated relation, the circuitry including a plurality of electrical conductors, a plurality of outlet means providing different voltages, a plurality of jack means for a plurality of different facilities, further outlet means, switch means, and a plurality of electrical equipment and electrical appliances connected to corresponding ones of the conductors, the insulation material comprising sheets of substantially juxtaposed plastic material, a first of the sheets having the electrical conductors embedded therein and a second of the sheets having a window formed therein, a modular member removably inserted in the window and housing the outlet means and the jack means, and connector means and thermostat means housed in the modular member.

3,842,321
ELECTRICAL SWITCHGEAR WITH PRIMARY AND SECONDARY SWITCH MEANS ASSOCIATED WITH CURRENT TRANSFORMER

George Caton, Illkley, England, assignor to Yorkshire Switchgear and Engineering Co. Limited, Yorkshire, England

Filed Mar. 12, 1973, Ser. No. 340,263
Claims priority, application Great Britain, Mar. 16, 1972, 12482/72
Int. Cl. H02b 11/06
U.S. Cl. 317—103 17 Claims

1. Electrical switchgear, comprising:

a. a stationary housing containing current inlet and outlet conductors forming elements of a primary high voltage circuit, transformer means, at least one secondary circuit fed by the transformer means and secondary switch means for controlling said secondary circuit;

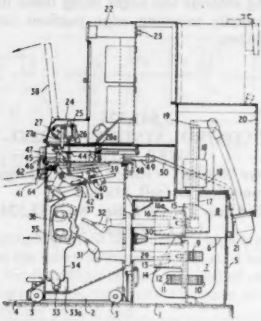
b. a movable housing containing primary switching means for said primary circuit, said primary switching means including contacts movable between open and closed positions;

c. mating primary supply contacts on said stationary housing and said movable housing, said primary supply contacts mating with each other when said movable housing is in an operative position relative to said stationary

housing to connect said inlet and outlet conductors to said primary switching means;

d. movable mechanical transmission elements projecting from said movable housing;

e. means coupling said transmission elements to said movable contacts for controlling the position of said transmission elements in accordance with the open and closed positions of said movable contacts of said primary switching means;



f. movable mechanical sensing elements projecting from said stationary housing and linked to operate said secondary switch means;

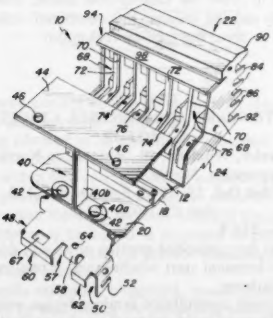
g. said sensing elements being juxtaposed with and engageable by said transmission elements when said movable housing is in said operative position whereby said secondary switch means is controlled in accordance with the open and closed positions of said movable contacts of said primary switching means through said transmission elements and sensing elements.

3,842,322

PLUG-ON DISTRIBUTION PANEL WITH RETAINING MEANS FOR BOTH SMALL AND LARGE CIRCUIT BREAKERS

James H. Leonard, St. Louis, Mo., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 17, 1972, Ser. No. 298,207
Int. Cl. H02b
U.S. Cl. 317—119 **4 Claims**



1. A mounting device for securing a small current capacity circuit breaker having at least one rear projecting plug-on jaw within a panelboard assembly of the type having a plurality of bus bars and having means for securing relatively larger current capacity circuit breakers with side projecting plug-on jaws in electrical contact with the bus bars, wherein the mounting device comprises

a. a base;

b. retaining means for mechanically retaining a small current capacity circuit breaker in removably fixed position with respect to said base; and

c. a plurality of terminal buses secured to said base, each said terminal bus including

1. a plug-on conductive jaw for making electrical contact with one of the panelboard bus bars, and

2. jaw receiving means for making electrical contact with the plug-on jaw of a small current capacity circuit breaker, said jaw receiving means including an elongated conductive portion,

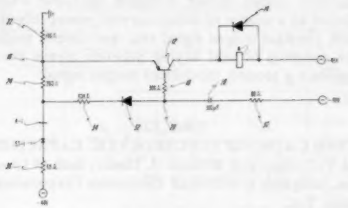
said terminal bus plug-on jaws extending in a first plane and said elongated conductive portions extending in a second plane perpendicular to said first plane, each said elongated conductive portion being positioned with its longitudinal axis perpendicular to said first plane to make electrical and mechanical contact with the rear projecting plug-on jaw of a small current capcity circuit breaker.

3,842,323

OPERATION AND RELEASE DELAY CIRCUIT

Joseph E. Harris, and William E. Shaffer, Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 22, 1973, Ser. No. 372,887
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S **5 Claims**



1. An electrical delay circuit for delaying, for predetermined periods of time, the operation and release from operation of a device which is arranged to be operated by the application of an electrical current therethrough, the delay circuit comprising:

a direct current source comprising a first and second potential wherein one of said potentials is ground, first switching means interposed between the device and said source, having operated and unoperated conditions and being effective to prevent a control signal from operating the device unless the first switching means is in its operated condition, said first switching means including a control input lead;

biasing means connected to the input lead, being effective upon the application of an electrical control signal to maintain the first switching means in its unoperated condition for a first predetermined period of time and thereafter to permit the first switching means to change to its operated condition;

second switching means connected between the input and the control signal and being responsive to the operation of the device to disconnect the biasing means from the control signal, the biasing means being effective upon disconnection from the control signal to return the first switching means to its unoperated condition after a second predetermined period of time, and

said biasing means including resistive voltage dividing means operable to provide a third potential to the first switching means during the time said switching means remains unoperated and a control signal is applied.

3,842,324

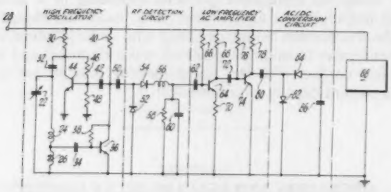
INDUCTION-KEYED CONTROL CIRCUIT WITH KEYING NETWORK HAVING VARIABLE RESONANT FREQUENCY

Carl E. Atkins, Montclair, N.J., assignor to Wager Electric Corporation, Parsippany, N.J.

Continuation of Ser. No. 145,308, May 20, 1971, abandoned. This application Oct. 27, 1972, Ser. No. 301,438

Int. Cl. H01h *47/22*

U.S. Cl. 317—146 **12 Claims**



1. An induction-keyed control circuit comprising:

1. passive keying network means including a tuned circuit having a current- and voltage-controlled variable capacitance, and operative to vary the resonant frequency of said tuned circuit between upper and lower limits when coupled to
2. keyable circuit means normally operative when connected to a source of direct-current power to generate a first, constant output signal and operative in response to the coupling of said keying network means thereto to generate a second, modulated output signal.

3,842,325

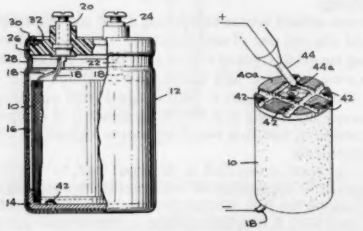
FUSED CATHODE ELECTROLYTIC CAPACITORS

Harold T. Callins, and William H. Doster, both of Greenfield, Tenn., assignors to Whitehall Electronics Corporation, Richardson, Tex.

Division of Ser. No. 259,920, June 5, 1972, Pat. No. 3,789,502. This application Sept. 17, 1973, Ser. No. 397,627

Int. Cl. H01g *9/00*

U.S. Cl. 317—230 **4 Claims**



1. An electrolytic capacitor comprising a capacitor cartridge in the form of a roll comprising a spirally wound set of layers of elongated alternately superposed metallic foil and dielectric strips, the metallic foil strips forming an anode foil of narrower width than the dielectric strips in insulated relation therebetween and a cathode foil positioned with one of its edges protruding in exposed relation beyond the corresponding edges of the dielectric sheets at one end of the roll, and said end of the roll having a pattern of rectilinear narrow width, elongated trough depressions therein formed in the protruding cathode foil edges of adjacent convoluted turns completly spanning said end along trough axes paralleling plural diameters of the roll extending crosswise of each other, said trough depressions having continuous trough walls formed of thermally fused-together contiguous edge portions immediately bordering on the trough depressions of all the mutually adjacent protruding cathode foil edges at said end, said protruding cathode foil edges being fused together only along the mutually touching edge portions bounding the trough depressions.

3,842,326

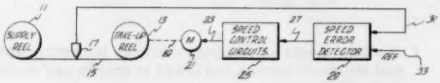
VELOCITY CONTROL SYSTEM FOR REEL-TO-REEL WEB DRIVE

Herman Walter Stocker, Ventura, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 27, 1973, Ser. No. 383,335

Int. Cl. H02p *5/16*

U.S. Cl. 318—7 **15 Claims**



1. A web velocity control system for a reel-to-reel web drive, having an electric motor for driving the take-up reel of a take-up reel, supply reel pair, comprising:

means for generating signals indicative of the time errors between the occurrences of an actual web velocity signal and a desired web velocity signal;

means, responsive to said time error indicating signal generating means, for generating web velocity correction signals that are proportional, in amplitude, to the voltage being supplied to drive the take-up reel motor and equal, in duration, to the time errors indicated by the time error indicating signals;

means, responsive to the voltage being supplied to drive the take-up reel motor, for dynamically storing its instantaneous value; and

means for combining the web velocity correction signals, from said web velocity correction signals generating means, and the instantaneous value of the voltage being supplied to drive the take-up reel motor, from said dynamically storing means, the combined voltage being supplied to drive the take-up reel motor.

3,842,327

SOLID STATE START AND CONTROL CIRCUIT FOR A. C. MOTOR

Joseph S. Wexler, Wilmette, Ill., assignor to North American Philips Corporation, Skokie, Ill.

Filed Oct. 25, 1973, Ser. No. 409,423

Int. Cl. H02p *1/44*

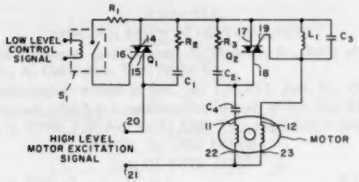
U.S. Cl. 318—221 E **7 Claims**

1. A circuit for controlled starting of an a.c. driven motor having a two-terminal start winding and a two-terminal run winding comprising:

a first bilateral controllable semiconductor switch having first and second main electrodes and a control electrode, said first main electrode adapted to being coupled to one terminal of said start winding of said motor, said control electrode adapted to being connected to one terminal of said run winding;

means connected between the control electrode of said first switch and the second main electrode of said first switch responsive to the current through the run winding for developing a voltage inversely related to the speed of the motor;

a second bilateral controllable semiconductor switch having first and second main electrodes and a control electrode, said second electrode being coupled to the second electrode of said first semiconductor switch;



means for coupling a first terminal of a high level a.c. signal source to the other terminals of said start and run windings and for coupling a second terminal of said high level signal source to the first main electrode of said second semiconductor switch; and

a low-level, controlled switch for coupling the control electrode of the second semiconductor switch with the second main electrode of said second semiconductor switch.

3,842,328

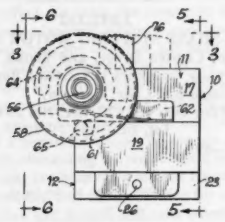
SPEED CONTROL DEVICE WITH INDEPENDENT SPEED CONTROL AND ON-OFF OPERATING MEMBERS

Ignacy Supel, and Hermann E. Braun, both of Wheeling, Ill., assignors to Skil Corporation, Chicago, Ill.

Continuation of Ser. No. 230,645, March 1, 1972, abandoned. This application June 15, 1973, Ser. No. 370,320

Int. Cl. H02p *5/16*

U.S. Cl. 318—249 **2 Claims**



1. In a speed control device for a portable electric tool or the like, the improvement comprising:

a. a casing adapted to be operatively mounted within such power tool or the like;

b. means within said casing defining a speed control circuit of the type which includes a linear variable resistor and an associated movable element whereby the speed of the tool motor may be varied in response to changes in the resistance of said variable resistor resulting from movement of said element;

c. a manually operable, elongated, speed control member mounted by said casing for reciprocal sliding movement and engaged with said movable element of said variable resistor for moving the latter in response to movement of said member;

d. on-off switch means including a movable contact associated with said circuit for opening and closing the same;

e. a manually operable, on-off, elongated control member mounted by said casing adjacent said speed control member for reciprocal sliding movement along a path parallel with the path of movement of the latter, said on-off control member being engaged with said movable contact for operating said on-off contacts in response to movement of said on-off control member, said speed control member and said on-off control member being slidably engaged with each other for independent sliding movement;

f. said speed control member including a series of gear teeth forming a rack;

g. said casing mounting a pinion gear engaged with said rack; and

h. a manually operable wheel engaged with said pinion gear thereby to impart reciprocal movement to said speed control member in response to rotation of said wheel.

3,842,329

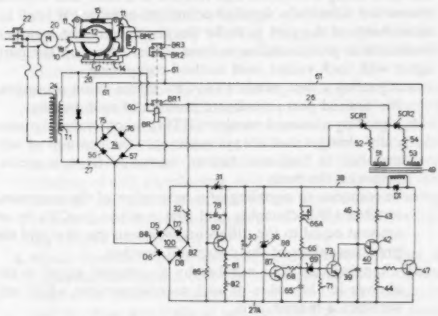
CONTROL FOR ELECTROMECHANICAL BRAKE HAVING TRANSISTORIZED TIMING RESET MEANS

Robert E. Mierendorf, Greendale, Wis., assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Nov. 12, 1973, Ser. No. 415,214

Int. Cl. H01h *47/04*

U.S. Cl. 318—372 **10 Claims**

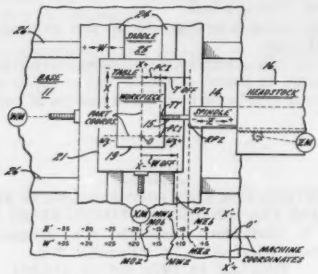


1. A static brake controller for an electromechanical brake having a brake coil energizable to release said brake, comprising: a first full-wave rectifier having a controlled rectifier in at least one leg thereof for applying a direct current voltage to said brake coil to release said brake; a second full-wave rectifier for applying a reduced direct current voltage to said brake coil to hold said brake coil released; means including a relaxation oscillator having a unijunction transistor and an emitter capacitor connected thereto, said unijunction transistor being actuatable for applying gating pulses to said controlled rectifier to effect release of said brake, said means further comprising a first transistor for controlling said emitter capacitor; oscillator disabling means including a timing capacitor dischargeable a predetermined interval after said relaxation oscillator is actuated to disable said relaxation oscillator, said oscillator disabling means further including a second transistor for controlling said timing capacitor, whereby said controlled rectifier is deactuated and said second full-wave rectifier applies said reduced direct current voltage to said brake coil to maintain said brake released; and reset means operable upon deenergization of said brake coil to operate said second transistor to short-circuit said timing capacitor and thereby reset the timing circuit means and to operate said first transistor to short-circuit said emitter capacitor to disable said relaxation oscillator.

3,842,330
METHOD AND APPARATUS FOR NUMERICAL CONTROL OF MEMBERS INDEPENDENTLY MOVABLE ALONG COINCIDENT AXES

Norbert C. Kolell, c/o Giddings & Lewis, Inc., Fond Du Lac, Wis. 54935

Filed Aug. 9, 1972, Ser. No. 279,232
Int. Cl. G05b *19/22*
U.S. Cl. 318—574 11 Claims



1. The method of controlling the successive positioning of a part relative to a tool member which are both independently movable along a common axis relative to a base, and wherein successive values of a signaled command number (W) call for movements of the part to make the positions of the member, measured in part coordinates from a first origin on the part, agree with such values, said method comprising

a. signaling a first number (w_zCP) whose value represents the desired part coordinate position of said member,

b. signaling a second number (ZTM) whose value dynamically changes and always represents the position of said member in base coordinates measured from a second origin on the base,

c. in response to signaling of a new value of the command number (W), changing said first number (w_zCP) by an amount equal to the difference between the new and the previous values of the command number,

d. changing said first number by an amount equal to the change in the value of said second number when said member is moved, and

e. moving said part along the base to keep its position in base coordinates equal to said first number but offset by an amount equal to the value of said second number.

3,842,331
DIGITAL STEPPING MOTOR CONTROL SYSTEM

Kenneth E. Hendrickson; Warren A. Lopour, both of Rochester, and Larry F. Matison, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 319,065
Int. Cl. G05b *1/00*
U.S. Cl. 318—685 19 Claims

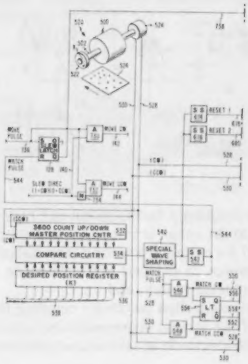
1. In combination,

an electric motor of the stepping type having a stator with a set of discrete poles and a rotor having a set of discrete poles with electrical windings on one of said sets of poles so that said rotor has a plurality of natural detent positions in which said rotor poles are aligned with poles of said stator or are between poles of said stator in a symmetrical relationship therewith when various of said windings are energized,

means for energizing said windings to apply torque on said rotor in a forward direction when supplied with a forward energization signal,

means for energizing said windings to apply torque on said rotor in a reverse direction when supplied with a reverse energization signal,

an emitter driven by said rotor for producing output signals as said rotor moves through successive increments each of Z° after passing through its desired or home position in the forward direction and producing the same output signals at the same rotor positions as the rotor moves back in the reverse direction from a maximum point X of oscillation in the forward direction in which X is equal to or more than (Y × Z°) but is less than (X + Z°) where Y is an even integer greater than or equal to 4 and Z is a constant,



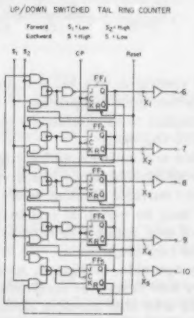
means under the control of said emitter for providing said reverse energization signal when said rotor passes through its home position moving in said forward direction until the point of maximum oscillation and then until the rotor returns to a point of S—Z° measured from home position where S is a switch point equal to (X + 2Z°)/2, and

means under the control of said emitter for providing said forward energization signal at said switch point S and said rotor is moving back in the reverse direction toward home position from its point of maximum oscillation.

3,842,332
FIVE-PHASE STEPPING MOTOR SYSTEMS

Gunter Heine; Carsten Droge, and Bruno Borgonovi, all of Lahr, Germany, assignors to Gerhard Berger Fabrik Elektrischer Messgerate, Lahr, Germany

Filed Oct. 4, 1972, Ser. No. 294,787
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 17 Claims



1. A five-phase stepping motor system, comprising a stepping motor having five untapped stator windings connected in

series with each other to form a pentagonal loop having five connecting points, a permanent magnet rotor, and control means connected to said five connecting points for sequentially energizing a different set of four of said windings simultaneously so as to step the motor, said control means forming with said windings damping means for damping the operation of the rotor after each step, said damping means including switching means in said control means for sequentially short circuiting the unenergized one of said windings during each sequential energization of four of the windings.

3,842,333

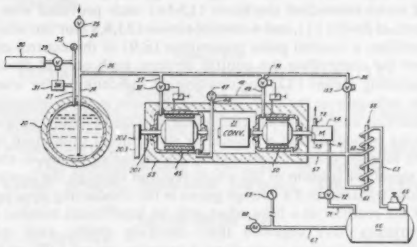
NON-POLLUTION MOTOR UNITS

Harold L. Boese, and Thomas R. Hencey, Jr., both of 1615 Ave., A, Galveston, Tex. 77550

Continuation-in-part of Ser. No. 106,651, Jan. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 94,814, Dec. 3, 1970, Pat. No. 3,681,609. This application July 21, 1972, Ser. No. 273,684

Int. Cl. F01k *15/02*

U.S. Cl. 320—2 **9 Claims**



1. A non-polluting power generating system, comprising a source of liquefied gas under pressure having a boiling temperature less than ambient temperature of the atmosphere, a gas motor, electrodynamic means driven by the gas motor for producing a mechanical output, fluid circuit means for conducting said liquefied gas from the source in heat exchange relation to the electrodynamic means to cool the same, evaporating means conducting the liquefied gas from the electrodynamic means in heat exchange relation to the atmosphere at said ambient temperature for supply of evaporated gas to the gas motor, means connected to the gas motor for exhausting said evaporated gas to the atmosphere, said electrodynamic means including a generator driven by the gas motor to produce an electrical alternating current output, insulated housing means enclosing the generator in heat transfer relation to the fluid circuit means, and control means for controlling the amount of liquefied gas passed into heat transfer relation to said generator.

3,842,334

OSCILLATOR CIRCUIT FOR PROVIDING A FAILSAFE DIRECT CURRENT VOLTAGE OUTPUT IN RESPONSE TO A PERIODIC SIGNAL INPUT

James H. Franz, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 11, 1973, Ser. No. 359,572

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **2 Claims**

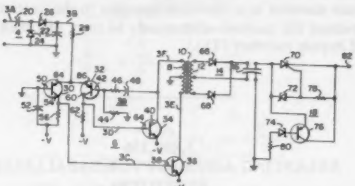
1. A failsafe driver comprising:

means for providing a periodic signal;

a detector for providing a first direct current signal in response to the provision of said periodic signal;

an oscillator comprising first and second transistors, each having base, emitter and collector electrodes, with the base electrode of each being connected to a first reference potential and one of the emitter or collector of each being connected together and also being connected to said detector for receiving said first direct current signal; third and fourth transistors each comprising an amplifier, and each having base, emitter and collector electrodes, with the base electrode of the third being connected to the remaining one of the emitter or collector electrode of said first transistor, and the base electrode of the fourth being connected to the remaining one of the emitter or collector electrode of said second transistor, and one of the emitter or collector electrode of said third and fourth transistors each being connected to a second reference potential;

a transformer having primary and secondary windings with each winding having at least first and second terminals, with the first terminal of the primary winding being connected to the remaining one of the emitter or collector



electrode of said third transistor, and with the second terminal of the primary winding being connected to the remaining one of the emitter or collector electrode of said fourth transistor;

first and second diodes each having cathode and anode electrodes, with one of the cathode and anode electrodes of each being connected together, and the remaining one of the cathode and anode electrode of the first diode being connected to the first terminal of the secondary winding of said transformer, and the remaining one of the cathode and anode electrode of the second diode being connected to the second terminal of the secondary winding of said transformer; and

a signal feedback path and timing network including a capacitor connected between the remaining one of the emitter or collector electrodes of said fourth transistor and the base electrode of said second transistor for controlling the timing of said oscillator.

3,842,335

STATIC CURRENT CONVERTER WITH BYPASS MEMBERS

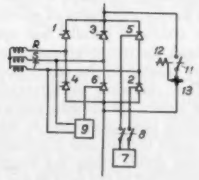
Carl Ingvar Boksjo, deceased, late of Gothenburg, Sweden (by Stina Boksjo, petitioner), assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 15, 1973, Ser. No. 360,539

Claims priority, application Sweden, May 18, 1972, 6517/72

Int. Cl. H02m *1/00*

U.S. Cl. 321—13 **7 Claims**



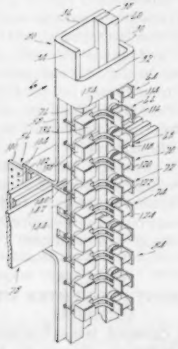
1. Current converter comprising a three-phase rectifier bridge (1–6) having a plurality of rectifiers in each phase and

a member (11) arranged in parallel with the bridge to bypass the DC side thereof, means for transferring current from said by-pass member (11) to two series-connected rectifiers (2,5) in one phase of the bridge so that they may act as by-pass rectifiers for the current converter, said means comprising a control circuit (7) for said series-connected rectifiers (2,5) to ignite such rectifiers and means to facilitate ignition of the two bypass rectifiers when the bypass member is opened in connection with a reconnection of the converter, comprising a firing device for at least one additional rectifier (6) of the bridge to ignite such additional rectifier, said firing device having such a delay angle that the internal direct voltage of the rectifier bridge will be positive seen in the conducting direction of the rectifiers, said current transferring means operating before deblocking of the current converter to connect said control circuit (7) to said two series-connected rectifiers (2,5), then to actuate said firing device (9) to ignite said rectifier (6) thereby causing current to flow through said bypass member in a direction opposite to the current therein to reduce the current substantially to zero, and then to open said bypass member (11).

3,842,336
BALANCING ASSEMBLY FOR PARALLELLED RECTIFIERS

James H. Galloway, New Baltimore, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Oct. 5, 1973, Ser. No. 404,097
Int. Cl. H02m 7/00
U.S. Cl. 321—27 R 20 Claims

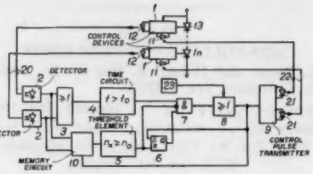


1. In a power converter system for converting an alternating source of electrical energy for use by a direct current load, the converter system having a plurality of rectifier elements connected in a finite system of parallel legs connected between said source and load, the improvement comprising means for equalizing the flux created by the self impedance of each leg having current flow including an alternating current buss connected to the source for feeding energy to the rectifier system, a distribution buss connected to the alternating current buss at one point thereof and connected to the rectifier elements at various points along the length thereof, and a collection buss connected to the load at one point thereof and to the rectifier elements at various points along the length thereof, said alternating current buss, said distribution buss and said collection buss forming an isosceles triangle when viewed axially of said busses.

3,842,337
THYRISTOR RECTIFIER HAVING A DEVICE FOR SELF-IGNITION OR RECOVERY PROTECTION

Åke Ekstrom; Lars-Erik Juhlin, and Karl-Erik Olsson, all of Ludvika, Sweden; assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 18, 1973, Ser. No. 370,753
Claims priority, application Sweden, July 10, 1972, 9080/72
Int. Cl. H02m 7/48
U.S. Cl. 321—27 R 8 Claims

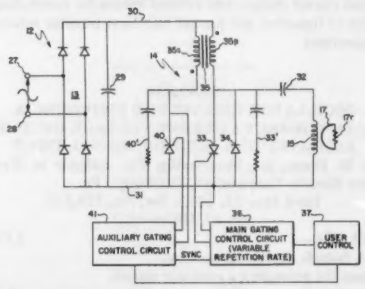


1. Thyristor rectifier for high voltage comprising a number of series-connected thyristors (13-1*n*) each provided with a control device (1), and a control circuit (23,8,9) for the whole rectifier, a control pulse transmitter (8,9) in the control circuit for controlling the control devices, each control device including means (12) for emitting an indicating pulse when the voltage over the corresponding thyristor in the conducting direction amounts to a certain value, and the thyristor rectifier being provided with a device for self-ignition protection for the thyristors, said protection device including means to emit a signal for ignition of the whole rectifier through the control pulse transmitter if a voltage grows in the conducting direction of the rectifier at a time when only an insufficient number of thyristors have regained their blocking ability, said self-ignition protection comprising a memory circuit (10) and a counter (5) to register said indicating pulses from the signal emitting means (12) of the control devices (1) and an output circuit (7 or 25 or 105) for the protection device connected between said counter (5) and said control pulse transmitter (8,9), said output circuit including means to emit a signal for ignition of the whole thyristor rectifier in dependence on a pre-determined number of indicating pulses.

3,842,338
EXTENDED OUTPUT POWER CONTROL OF INVERTER

John P. Walden, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 212,295, Dec. 27, 1971. This application Apr. 20, 1973, Ser. No. 352,880
Int. Cl. H02m 7/52
U.S. Cl. 321—43 4 Claims



1. A wide range output power inverter connected between a pair of unidirectional voltage input terminals comprising

a series resonant circuit comprising a commutating capacitor and a pair of alternately conducting main power devices which are operated at a variable frequency within a selected frequency range to generate a train of oscillatory pulses with a variable delay interval therebetween, to thereby achieve high output power control,

a reset transformer having inductively coupled primary and secondary windings, said primary winding being operatively connected to said series resonant circuit and input terminals to store energy during conducting intervals of said main power devices and discharge energy during the delay intervals between consecutive oscillatory pulses that serves to recharge said commutating capacitor and sustain circuit oscillation, and

low output power control means for obtaining a plurality of low output power levels while operating within said selected frequency range by controlling the amount of energy discharged by said primary winding and thereby variably recharging said commutating capacitor, said low output power control means comprising a circuit including said reset transformer secondary winding and a series connected auxiliary thyristor device that is selectively rendered conductive at a variable time during said delay intervals.

3,842,339
INVERTER FOR A LOAD HAVING A PARALLEL RESONANT CIRCUIT

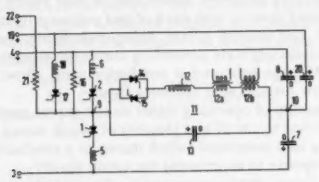
Manfred Hoffman, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 119,157, Feb. 26, 1972, abandoned. This application June 5, 1972, Ser. No. 260,016

Claims priority, application Germany, Apr. 2, 1970, 2015673

Int. Cl. H02m *7/48*

U.S. Cl. 321—44 **6 Claims**



1. An inverter comprising

an input comprising a cource of direct voltage;

a first controllable converter valve;

a second controllable converter valve connected in series with the first converter valve;

first power storage means comprising a first capacitor;

second power storage means comprising a second capacitor, the first and second capacitors being connected in series with each other and the series connection of the first and second converter valves being connected in parallel with the series connection of the first and second capacitors;

a load circuit comprising a parallel resonant circuit connected between a common point in the connection between the first and second converter valves and a common point in the connection between the first and second capacitors, the parallel resonant circuit comprising output means for connecting a load thereto, a capacitor, an inductance including the inductance of the load, and at least two alternately controllable valves connected in anti-parallel with each other;

and firing means which fire said first and second controllable converter valves at approximately maximum current in said parallel resonant circuit.

3,842,340
GENERATOR FOR PRODUCING ULTRASONIC OSCILLATIONS

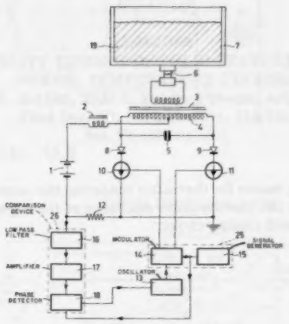
Rune Lennart Brandquist, Vaestra, Sweden, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,674

Claims priority, application Sweden, Feb. 20, 1969, 2321/69

Int. Cl. H02m *7/00;* **H01v** *7/00;* **H02b** *9/00*

U.S. Cl. 321—45 R **10 Claims**



1. A generator for producing ultrasonic oscillations, comprising a resonant circuit and a transducer coupled thereto to receive the output energy thereof, a direct current source coupled in circuit to two switching devices controlled by means of a controllable oscillator so as to convert the DC current into an alternating current, means for applying said alternating current to said resonant circuit, means connected to said switching devices and to said controllable oscillator for modulating said alternating current, a comparison device connected to said modulating means and to a parallel resistor included in the alternating current circuit, said resistor deriving a signal that exhibits an amplitude response to the frequency variations which determines the sign of the derivative of the current with respect to the current frequency, said comparison device providing an output signal whose polarity is determined by the phase relationship between the signal derived across the resistor and the signal received from said modulating means, and means for applying said output signal as a control signal to said controllable oscillator thereby to vary the frequency thereof in a direction tending to optimize the energy transfer to the transducer.

3,842,341
RINGING CHOKE INVERTER WITH COMMUTATION CIRCUIT

Jacob Goldberg, Newtonville, Mass., assignor to United States Scientific Instruments Inc., Watertown, Mass.

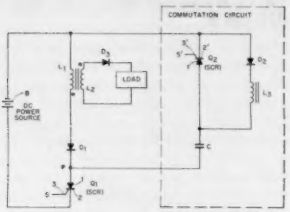
Filed May 2, 1973, Ser. No. 356,401

Int. Cl. H02m *3/32*

U.S. Cl. 321—45 C **5 Claims**

1. A ringing-commutation system having, in combination, an inverter circuit comprising a ringing choke connected with a direct current source of power in a first circuit loop containing first switching means which, when rendered conductive, enables the storage of energy from said source in said ringing choke through said first circuit loop; a commutation circuit connected across the ringing choke comprising a series resonant charging circuit including storage capacitor means chargeable by such series resonance and a second circuit loop including said storage capacitor means and further switching means; a load coupled to the ringing choke; first pulse generating means for rendering the first switching means conduc-

tive to enable said storing of energy in the ringing choke and the series resonance charging of said capacitor means; and further pulse generating means connected with the further



switching means for thereafter rendering the same conductive to enable the commutation discharge of the capacitor means through said ringing choke.

3,842,342

VOLTAGE STABILISING ARRANGEMENTS

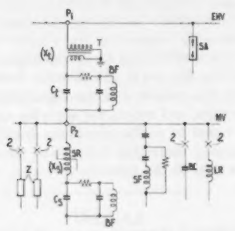
Erich Siegfried Friedlander, Sutton Coldfield, and Hemesh Laxmidas Thanawala, Stafford, both of England, assignors to Associated Electrical Industries Limited, London, England

Filed June 12, 1973, Ser. No. 369,191

Claims priority, application Great Britain, Aug. 14, 1972, 37799/72

Int. Cl. H02j *3/12*

U.S. Cl. 323—124 **4 Claims**



1. A voltage stabilising arrangement for alternating current supplies, of the kind incorporating at least one saturated reactor and designed for stabilising the voltage in a high voltage transmission line having a lower voltage feed conductor connected thereto via a step-down transformer, wherein the saturated reactor is connected to the feed conductor, and the arrangement incorporates a first series capacitor associated directly with the reactor for compensating the slope reactance of the reactor, at least one other series capacitor associated with the transformer for compensating the leakage reactance of the latter, with the capacitors chosen so that together they provide slope compensation for maintaining a substantially constant voltage in the transmission line, and a by-pass filter system connected in parallel with the slope compensating capacitors for suppressing instability-producing harmonics or sub-harmonics which may be generated within the arrangement.

3,842,343

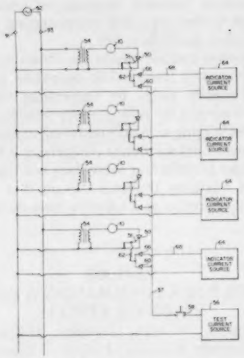
REMOTE PRESS TO TEST INDICATING LIGHT CIRCUIT

Glenn R. Taylor, and Walter J. Kellogg, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 26, 1973, Ser. No. 401,096

Int. Cl. G01r *31/22*

U.S. Cl. 324—21 **16 Claims**



1. An indicator light circuit comprising:

a plurality of indicator lights;

terminal means connected to a power supply means for supplying power to each of said plurality of indicator lights;

a plurality of switch means, one of said switch means disposed in series with each of said indicator lights, and each of said switch means being switchable from a non-conducting state preventing current flowing through said indicator light and a conductor state allowing current flow through said indicator light;

a plurality of operating signal circuit means, each one connected to one of said plurality of switch means for switching said associated switch means to a conducting state in response to an external operating signal;

test circuit means connected to all of said plurality of switch means for switching all of said switch means to a conducting state in response to a manually originated operability check of the indicator lights; and,

isolating means for preventing current flow from any of said operating signal circuit means into said test circuit means.

3,842,344

BRIDGE CIRCUIT FOR MEASURING DIELECTRIC PROPERTIES OF INSULATION

Edmund H. Povey, Medford, Mass., assignor to Doble Engineering Company, Belmont, Mass.

Filed Jan. 10, 1974, Ser. No. 432,192

Int. Cl. G01r *27/26, 31/14*

U.S. Cl. 324—54 **14 Claims**

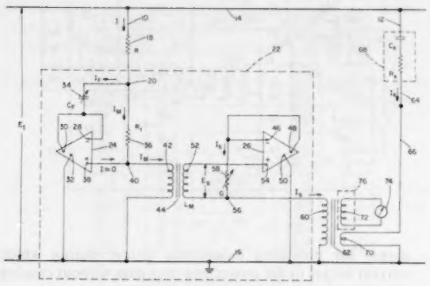
1. Apparatus to be used in conjunction with a source of alternating test voltage for measuring the capacitance and power factor of a test specimen, said apparatus comprising:

a standard resistor,

a mutual inductor having first and second windings, said first winding being connected in series with said standard resistor such that the current through said first winding, resulting from application of said test voltage to said apparatus, is substantially determined by said standard resistor and is in phase with said test voltage, said mutual inductor constructed such that the voltage induced in said second winding is substantially in quadrature phase relation with said test voltage,

a current source responsive to the voltage induced in the second winding of said mutual inductor, which produces an output current substantially in phase with said induced voltage,

means for controlling the magnitude of the current output of said current source with no significant effect on the current in the first winding of said mutual inductor,



terminal means for connecting said test specimen across said source of test voltage, and

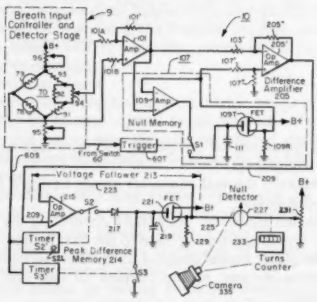
detection means responsive to the difference in phase and magnitude between the output current of said current source and that of the current through said specimen resulting when said specimen is connected to said terminal means with said test voltage applied.

3,842,345

METHOD AND APPARATUS FOR OBTAINING ACCURATE READOUT OF BREATH TESTERS

Kenneth W. Padgitt, Arlington Heights, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 10, 1971, Ser. No. 197,407
Int. Cl. G01n *27/00*; A61b *5/00*
U.S. Cl. 324—71 R **7 Claims**



1. In a breath tester of the type that includes a detector which produces time varying d.c. output electrical signals having a peak amplitude representative of gaseous content, which signals vary during a period of detecting, the improvement comprising:

memory means for producing and holding a peak signal, coupled to the output of said detector and responsive to the detector's peak output signal;

variable signal means (**331**) for producing selectively variable output signals;

readout means (**233**) coupled to the variable signal means for giving a readout proportional to the signal output of said variable signal means; and

an indicator (**227**) coupled to receive and compare the output signals of said memory means and said variable signal means for indicating when those signals reach a predetermined relationship;

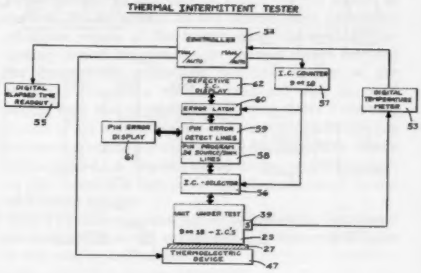
whereby said variable signal means may be adjusted to reach said predetermined relationship and an accurate readout of the detected gaseous content may be obtained and stored on said readout means.

3,842,346

CONTINUITY TESTING OF SOLID STATE CIRCUITRY DURING TEMPERATURE CYCLING

Charles R. Bobbitt, 2536 E. Dahlia, Phoenix, Ariz. 85032

Filed Dec. 20, 1972, Ser. No. 316,796
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **8 Claims**



1. A method of inspecting a plurality of electronic devices, each device containing a like number of circuits, each of said circuits being electrically connected between at least two conducting means, said conducting means being located on said devices and being arranged for electrically connecting said devices to external electrical circuit means, said method comprising the steps of:

a. mounting said devices on a support means,

b. testing a first one of said circuits in each of said plurality of devices for electrical conduction continuity in said first circuit by sequentially applying two different electrical potentials between two conducting means to which said one circuit is connected, said electrical potentials being of such magnitudes that the application of one electrical potential causes current to flow in one direction through said circuit and the application of the other electrical potential causes current to flow in the opposite direction through said circuit, and detecting whether the electrical conduction continuity of said one circuit is broken or now broken during the application of said electrical potentials to said conducting means,

c. providing an indication of a lack of electrical conduction continuity for each device in which the electrical conduction continuity between the conducting means connected to said first circuit is determined to be broken,

d. testing a second one of said circuits in each of said plurality of devices for electrical conduction continuity in said second circuit between two conducting means to which it is connected in the manner provided in step (b),

e. providing an indication of a lack of electrical conduction continuity for each device in which the electrical conduction continuity between the conducting means connected to said second circuit is determined to be broken,

f. testing in turn each of the remaining circuits of said devices, providing indications of any lack of electrical conduction continuity for those devices in which the electri-

cal conduction continuity between the conducting means is determined to be broken,

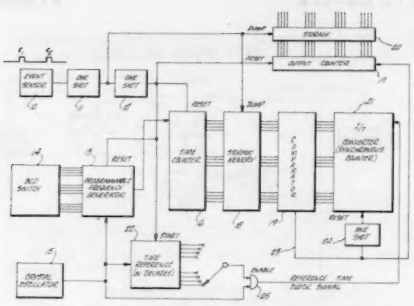
g. subjecting said devices to a temperature cycle of approximately one to five minutes time duration and approximately 75° to 100°C. temperature range as steps (b) through (f) are performed, said temperature cycle being of sufficient time duration to permit each circuit of each said device to be tested at least once during said temperature cycle.

3,842,347

RATE MEASUREMENT CIRCUIT

William H. Terbrack, Tustin, Calif., assignor to Gardner-Denver Company, Quincy, Ill.

Filed July 3, 1973, Ser. No. 376,187
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 D **8 Claims**



1. A rate measurement circuit comprising:

means for measuring each elapsed time interval between successive events and for storing a first count indicative of each elapsed time in a storage memory;

time reference means for producing signals for a predetermined duration;

first counter means electrically coupled to said time reference means for counting the signals from said time reference means; and

comparator means coupled to said storage memory and said first counter means for comparing the first count in said storage memory with the count in said first counter and for providing an output pulse when the first count equals the count in said first counter means, the sum of the output pulses being the rate of the successive events.

3,842,348

DEVICE FOR MONITORING EXCESS CURRENT USAGE BASED ON COULOMETRIC CELL

Allyn N. Goshy, 813 Queens Ln., Anoka, Minn. 55303

Filed Aug. 6, 1973, Ser. No. 385,888
Int. Cl. G01r *11/44*, *19/16*
U.S. Cl. 324—94 **13 Claims**

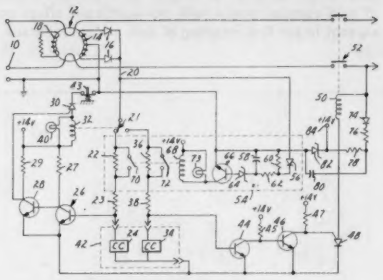
1. A device for monitoring current usage above a given threshold comprising

a current transformer having a primary winding for connection to a power line to be monitored,

a rectifier including a winding on the transformer,

gating means connected to the output of the rectifier for passing current when the voltage at the rectifier output exceeds a predetermined level,

means responsive to said passing current for indicating current usage on the power line above the threshold, and an integrating circuit between the rectifier and the gating



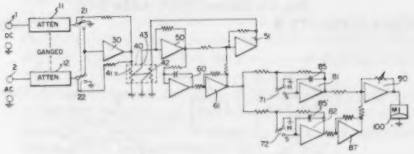
means for providing momentary delays during which current surges in the power line may pass without causing the gating means to become conducting.

3,842,349

AUTOMATIC AC/DC RMS COMPARATOR

Louis G. Cox; Norbert L. Kusters, and Malcolm P. MacMartin, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 7, 1973, Ser. No. 386,407
Int. Cl. G01r *17/02*, *15/10*, *5/22*
U.S. Cl. 324—98 **16 Claims**



1. An apparatus for comparing a first voltage to a second voltage comprising:

a differential thermal converter means having a first and a second heater;

first switch means for alternately connecting the first voltage and the second voltage to the first heater;

first amplifier means coupled to the thermal converter;

integrator-inverter means coupled to the first amplifier means;

means for summing the outputs of the amplifier means and the integrator-inverter means;

means for coupling the summing means to the second heater;

first and second sample-and-hold means;

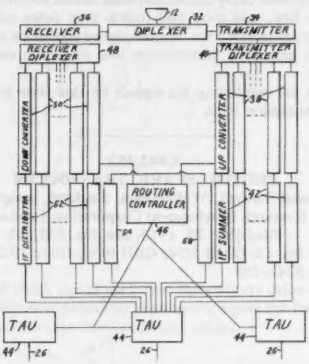
second switch means for alternately connecting the first and second sample-and-hold means to the integrator-inverter means output in synchronism with said first switch means; and

means coupled to the first and second sample-and-hold means for providing the difference between the two sample-and-hold outputs.

3,842,350
COMBINED LAND LINE AND SATELLITE COMMUNICATION SWITCHING SYSTEM

William B. Gross, Havertown, Pa., assignor to General Electric Company, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,298
Int. Cl. H04b *7/20*
U.S. Cl. 325—4 **3 Claims**



1. A primary office earth station comprising
a. directive antenna means connected to
b. transmitter means to amplify without frequency change and transmit to the directive antenna means a plurality of modulated signals separated from each other in frequency but all lying within the transmission band of the transmitter means, which plurality it receives from
c. transmitting frequency converter means to receive the said modulated signals at separated intermediate frequencies lying within a common intermediate frequency band and to translate them in frequency to lie within the transmission band of the transmitter means;
d. a plurality of transmitting intermediate frequency means each connected to receive signals from an access line and to convert them to a modulated signal at one of the said separated intermediate frequencies, and to transmit the said modulated signal to the transmitting frequency converter means and to receiving intermediate frequency means, comprising:
1. modulator means;
2. controllably programmable oscillator means programmable by control signals to oscillate at a frequency effective to produce the said modulated signal at an intermediate frequency determined by the said control signals;
3. controllable switching means controllable by control signals to selectively connect the transmitting intermediate frequency means to the transmitting frequency converter means and to a plurality of receiving intermediate frequency means;
e. receiver means to receive from the directive antenna means a plurality of modulated signals separated in frequency but lying within the transmission band of the receiver means, amplify them without frequency change, and transmit them to
f. receiving frequency converter means to receive the said modulated signals and translate them to lie within the intermediate frequency band, and transmit them to
g. a plurality of receiving intermediate frequency means each connected to receive separated modulated signals in the common intermediate frequency band from receiving frequency converter means and from a plurality of transmitting intermediate frequency means and to demodulate a separated modulated signal and transmit the demodulated signal to an access line, comprising:
1. demodulator means;
2. controllably programmable oscillator means programmable by control signals to oscillate at a frequency effective to cause the demodulator means to demodulate a signal at an intermediate frequency determined by the said control signals;
3. controllable switching means controllable by control signals to selectively connect the receiving intermediate frequency means to the receiving frequency converter means and to a plurality of transmitting intermediate frequency means;
h. a plurality of supervision and control means, one of which is uniquely associated with each access line, a transmitting intermediate frequency means and a receiving intermediate frequency means being also uniquely associated with said access line, comprising:
1. address means permanently connected to gate signals from the routing controller which include identification of the access line to
2. means to receive coded signals thus gated and, responsively thereto, to generate oscillator control signals to control the frequency of the controllably adjustable oscillator means of the transmitting intermediate frequency means associated with the said access line and the controllably adjustable oscillator means of the receiving frequency means associated with the said access line, and to control the controllable switching means of the same transmitting intermediate frequency means and to control the controllable switching means of the same receiving frequency means; and to transmit to the access line functional signals reresented by the said coded signals;
3. means to receive coded signals representing functional information from the access line and to transmit them to the routing controller;
i. routing controller means comprising:
1. means to receive the said coded signals recited in *h*)3) and to transmit them to
2. controller transmitting intermediate frequency means permanently connected to said transmitting frequency converter means, and adapted to receive coded signals and produce signals in a fixed intermediate transmitting frequency modulated to represent the said coded signals;
3. supplemental identification signal means to produce coded signals supplementary to the said coded signals recited in *i*)3) and to transmit them to the said controller transmitting intermediate frequency means;
4. controller receiving intermediate frequency means permanently connected to said receiving frequency converter means, and adapted to receive therefrom signals at a fixed intermediate receiving frequency modulated to represent coded signals and to demodulate them to produce the said coded signals, and connected to transmit them to the function table and storage and shift register means recited in *i*)2).

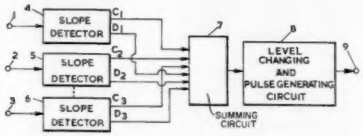
3,842,351
CONFERENCE CIRCUITS FOR DELTA-MODULATED DIGITAL TELECOMMUNICATIONS SYSTEMS

Hugh Sherwood Field-Richards, Ringwood, England, assignor to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

Filed Mar. 26, 1973, Ser. No. 344,580
Claims priority, application Great Britain, Mar. 27, 1972, 14238/72
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 B **5 Claims**

1. A signal combiner, for combining a plurality of delta-modulation encoded representations of analogue signals to

form an equivalent of a delta-modulation encoded representation of a combination of the analogue signals, which includes a plurality of concurrently operative slope detector circuit means for deriving an output signal representing a slope of a separate one of the analogue signals from a comparison of two or more consecutive bit signals in its delta-modulation encoded representation, summing circuit means for receiving



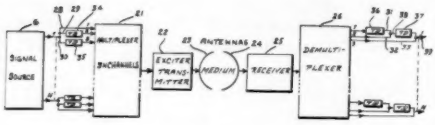
the output of the slope detector circuit means and for deriving an output dependent on the sum of the slopes represented by the said output signals, and pulse generating circuit means, controlled by the output of the summing circuit, for generating pulse sequences to form a stream of signals equivalent to a delta-modulation encoded representation of an analogue signal having a slope indicated by the instantaneous output of the summing circuit means.

3,842,352

COMMUNICATIONS SYSTEM HAVING SINGLE RF CHANNEL DIVERSITY MEANS

Walter E. Cote, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed July 14, 1972, Ser. No. 271,944
Int. Cl. H04b *7/02*
U.S. Cl. 325—56 **5 Claims**



1. A communications system comprising at a transmitting station;

a signal source,

first, second and third transmission lines, each said transmission line being connected to receive simultaneously signals generated by said signal source,

a first time delay means disposed in said second transmission line,

a second time delay means disposed in said third transmission line,

a multiplexer adapted to multiplex the signals on each transmission line onto a signal RF carrier; and

a communications transmitter connected to the output thereof for transmitting said multiplexed signals to a remote receiving station, and

at said remote receiving station,

a communications receiver adapted to receive said transmitted multiplexed signals,

a demultiplexer connected thereto,

a fourth transmission line connected to the output of said demultiplexer to receive undelayed demultiplexed signals,

fifth and sixth transmission lines connected to the output of said demultiplexer to receive delayed demultiplexed signals,

a third time delay means disposed in said fourth transmission line,

means for combining the signals on said fourth and fifth transmission lines,

a seventh transmission line connected to receive the combined signals of said fourth and fifth transmission lines,

a fourth time delay means disposed in said seventh transmission line, said third and fourth time delay means being adapted to bring the demultiplexed signals on said fourth, fifth and sixth transmission line into time coincidence, and

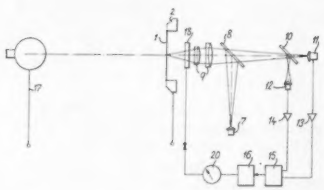
means for combining the signals on said sixth and seventh transmission lines.

3,842,353

PHOTOELECTRIC TRANSDUCER

David John Stewart, Wokingham, England, assignor to National Research Development Corporation, London, England

Filed Feb. 23, 1973, Ser. No. 335,111
Int. Cl. G01d *5/34;* **G01l** *9/00;* **G01r** *29/22*
U.S. Cl. 324—109 **20 Claims**



1. An electro-optical device comprising an electrically conductive and optically reflective membrane; a source of radiation; a pair of detectors; a lens system for focussing the radiation and for imaging the focussed radiation onto said pair of detectors, said pair of detectors being displaced with reference to one another on either side of the image plane of the focussed radiation; a beam splitter for splitting the imaged radiation reflected by said membrane onto said pair of detectors, so that movement of the membrane creates output signals from said detectors which differ in phase; electrical means for deriving from the outputs of the pair of detectors an electrical signal the sign of which is dependent on the direction of displacement of said membrane and the magnitude of which is dependent on the amount of displacement; and at least one electrostatic electrode mounted adjacent to said membrane for driving the membrane toward its null position in response to a negative feedback signal proportional to said electrical signal.

3,842,354

DIGITAL SWEEP FREQUENCY GENERATOR EMPLOYING LINEAR SEQUENCE GENERATORS

Michael P. Dunne, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

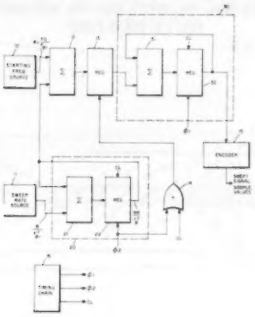
Filed June 29, 1972, Ser. No. 267,715
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **2 Claims**

1. A sweep frequency generator comprising

a timing source for producing first and second clock signals where the frequency of the second clock signal is lower than the frequency of the first clock signal;

a first linear sequence gener[illegible]or responsive to the first clock signal and to a start value to produce a set of values indicative of a signal having a frequency proportional to the start value; and

means responsive to the second clock signal for modifying the start value by equal increments in every cycle of the



second clock signal such that the outputs values of said first sequence generator represent a signal the frequency of which sweeps from said start value.

3,842,355

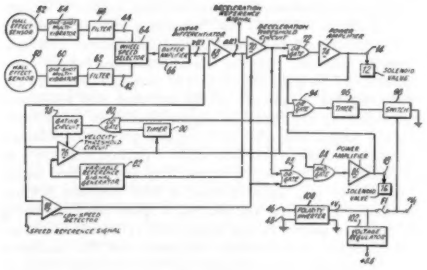
SIGNAL PROCESSING CIRCUIT FOR WHEEL SLIP CONTROL SYSTEMS

Joseph E. Fleagle, Overland, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Division of Ser. No. 218,378, Jan. 17, 1972. This application Mar. 13, 1973, Ser. No. 340,735.

Int. Cl. H03k *5/18*

U.S. Cl. 328—114 **10 Claims**



1. A signal-processing circuit comprising:

1. first circuit means operative to receive an input signal and to generate a signal representative of the first derivative of said input signal, and further operative to generate a first variable-width pulse whenever said signal representative of the first derivative of said input signal exceeds a first reference signal; and
2. second circuit means operative to receive said input signal, said signal representative of the first derivative of said input signal, and said first variable-width pulse from said first circuit means, and further operative to generate a second variable-width pulse whenever said input signal falls below a second, variable reference signal after initiation of said first variable-width pulse.

3,842,356

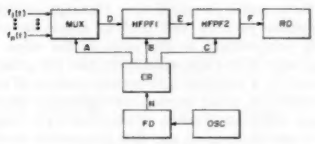
PEAK DETECTOR

Abram Batenburg, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1973, Ser. No. 330,162

Int. Cl. H04q *11/00*

U.S. Cl. 328—150 **6 Claims**



1. A peak detector for determining the extreme value attained by one or more rapidly varying monitored input signals comprising:

a multiplex unit operable to sequentially sample the monitored inputs cyclicly and provide an output sequentially representative thereof;

a first order lag unit having an input from said multiplex unit output and responsive thereto to provide an output which tracks the extremum of said lag unit input, said lag unit including a first feedback loop operable to follow and maintain the output value thereof until said multiplex output exceeds said lag unit output and a second feedback loop operable to communicate said lag unit output to said multiplex output and subtract the same therefrom before being applied to the input side of said lag unit; and means responsive to the polarity of the difference of the input signal to said lag unit and said lag unit output to disconnect the input from communication to said first feedback loop and said lag unit output when a predetermined polarity is exhibited by the difference, and communicate the same when an opposite polarity to the predetermined polarity is exhibited by the difference, said first feedback loop being operable upon disconnection to maintain said lag unit output at the value last exhibited.

3,842,357

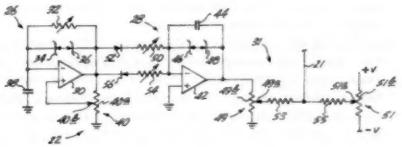
CALIBRATION OF ELECTRICAL BLOOD-PRESSURE MONITORING EQUIPMENT

Thomas B. Hutchins, IV, 310 N.W. Brynwood Ln., Portland, Oreg. 97229

Filed Apr. 16, 1973, Ser. No. 351,621

Int. Cl. H03k *4/02*

U.S. Cl. 328—188 **5 Claims**



1. Apparatus for producing electrical voltage wave forms usable especially for calibrating an electrical instrument for monitoring human arterial blood pressure, said apparatus comprising

generating circuit means operable to generate a monopolar first electrical voltage wave form having a leading edge with a predetermined positive slope of one value, and a trailing edge with a predetermined negative slope of another value which is one-half said one value, said lead-

ing and trailing edges being separated in time by a substantially constant amplitude portion,

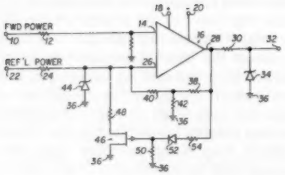
differentiating circuit means operatively connected to said generating circuit means to receive such a first wave form, operable, on receiving the same, to differentiate it and produce a bipolar second electrical voltage wave form having a first-in-time rectangular pulse with one polarity, and one amplitude which is directly proportional to the value of the slope of said leading edge of said first wave form, and a second-in-time rectangular pulse with the opposite polarity, and another amplitude which is directly proportional to the value of the slope of said trailing edge of said first wave form, said two pulses being separated by a constant zero-voltage portion of said second wave form, which portion corresponds in time to said constant amplitude portion of said first wave form, and

output means for coupling said first and second wave forms to such a monitoring instrument whereby proper operation of said instrument is verified by said constant zero-voltage portion of said second wave form.

3,842,358
VOLTAGE STANDING WAVE RATIO DETECTING AND ADJUSTING APPARATUS

Melvin A. Frazier, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed June 18, 1973, Ser. No. 371,099
Int. Cl. H03d *3/10*
U.S. Cl. 329—129 **3 Claims**



1. Hysteresis type ratio detector apparatus comprising, in combination:

differential amplifier means including first and second input means and output means;

first and second apparatus signal input means for supplying two variable amplitude signals the ratio of which is to be compared;

means connecting said first and second apparatus signal input means to the first and second input means of said amplifier means, respectively;

apparatus output means for providing an output signal when the ratio of signals supplied by said first and second apparatus input signals exceeds a first given ratio in one direction of voltage change from a reference potential and the output signal continuing until the input signals exceed a second given ratio in a direction of voltage change opposite said one direction;

variable impedance means, including control means, for varying in impedance in response to a control signal;

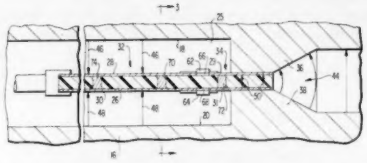
means connecting said variable impedance means to said first input means of said amplifier means for altering applied signal levels to said amplifier means to change from one given ratio to the other given ratio when the impedance of said variable impedance means changes; and

means connecting said output means of said amplifier means to said apparatus output means and to said control means of said variable impedance means.

3,842,359
BALANCED PARAMETRIC AMPLIFIER

Lawrence E. Dickens, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1973, Ser. No. 420,481
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.9 **11 Claims**



1. A parametric amplifier including a signal circuit, a pump circuit, and an idler circuit with varactor diode means located at the junction of the signal circuit and the pump circuit, comprising in combination:

a section of microwave waveguide having a cavity;

said pump circuit supplying pump energy from an external source to one end of said section of waveguide and including, dielectrically loaded parallel strip transmission line means terminating at one end in said waveguide cavity, a waveguide to parallel strip transmission line transition coupling the other end of said parallel strip transmission line means to said external pump source, said parallel strip transmission line terminating in said transition, and first inductive reactance means selectively positioned with respect to said varactor diode means in said parallel strip transmission line means for matching said varactor diode means to the pump energy;

said signal circuit commonly coupling a signal from an external signal circuit to and from the other end of said section of waveguide and including, suspended substrate stripline transmission line means located in said waveguide cavity for transforming the impedance of the external signal circuit and the varactor diode means to a common point of relatively low impedance and for obtaining a double tuned gain-bandpass characteristic, said suspended substrate stripline transmission line means comprising, a first stripline portion of selected geometry for reducing the magnitude of the external load resistance provided by said external signal circuit to a predetermined magnitude, a second stripline portion of selected geometry adjacent said first stripline portion and acting as a resonant circuit tuned to the frequency of said signal coupled to said signal circuit, a third stripline portion coupled to said first and second stripline portions, being of selected geometry and acting as a relatively low reactance section that parallely resonates with the reactance of the varactor diode means and forming said common point of relatively low impedance thereby, and a fourth stripline portion of selective geometry adjacent said third stripline portion and acting as an impedance inverter of the reactance of the reactor diode means to said common point of relatively low impedance;

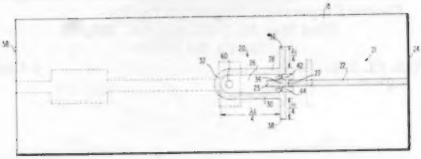
said varactor diode means being coupled between said fourth stripline portion and the other end of said dielectrically loaded parallel strip transmission line means and located in a gap therebetween; and

said idler circuit circulating an idler current and including said first inductive reactance means, second inductive reactance means selectively positioned with respect to said varactor diode means in said fourth stripline portion, and the parallel strip and suspended substrate stripline transmission line means segments lying between said first and second inductive reactance means on either side of said varactor diode means.

3,842,360
PARAMETRIC AMPLIFIER

Lawrence E. Dickens, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1973, Ser. No. 420,480
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 12 Claims



1. A balanced parametric amplifier including varactor diode means, comprising in combination:

a planar substrate of dielectric material;

an electrically conductive film on one side of said substrate;

a pump circuit for supplying pump energy to said varactor diode means from an external source, formed on said one side of said substrate and being characterized by a slot transmission line of a selected length formed in said film and having a discontinuity intermediate said length for exhibiting an inductive reactance characteristic in said slot line to match the impedance of the external pump source coupled to said slot line to said varactor diode means;

a signal circuit for commonly coupling a signal to and from said varactor diode means and transforming the impedance of an external signal circuit coupled thereto and said varactor diode means to a common point of relatively low impedance and for obtaining a double tuned gain-bandpass characteristic, being characterized by, (1) a co-planar transmission line formed in said conductive film on said one side of said substrate and having one end electrically coupled to said slot line to form a hybrid junction and having a length substantially equal to one quarter wavelength of the signal to be amplified for effecting an impedance inversion of impedance of said varactor diodes to said common point of relatively low impedance, (2) co-planar to microstrip transition means formed through said substrate to the opposite side thereof at the other end of said co-planar transmission line, said transition effectively embodying said common point, and (3) a microstrip transmission line formed on said opposite side of said substrate and including a first line portion of selected geometry for reducing the magnitude of the load impedance provided by said external signal circuit to a predetermined magnitude, a second line portion of selected geometry providing a resonator tuned to the input signal frequency, and a third line portion located at said transition means being of a selected geometry for providing a relatively low reactance that parallely resonates with the reactance of said varactor diode means as transformed by the impedance inverting action of said co-planar transmission line to said transition means;

said varactor diode means comprising a pair of varactor diodes located at said hybrid junction in balanced circuit relationship;

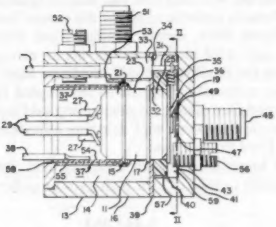
an idler circuit including an area of conductive film on said one side of said substrate coupling said pair of varactor diodes for permitting an idler current to flow therebetween; and

an idler filter circuit comprising planar circuit means formed on said substrate adjacent said varactor diodes for preventing the idler current to flow to said pump circuit and said signal circuit.

3,842,361
MICROWAVE AMPLIFIER

John Benjamin Quirk, Owensboro, Ky., assignor to General Electric Company, Owensboro, Ky.

Filed Oct. 15, 1973, Ser. No. 406,201
Int. Cl. H03f 3/60
U.S. Cl. 330—56 10 Claims



1. A microwave frequency amplifier comprising:

a. a conductive shell having a main body and at least one end wall, said main body having a longitudinal axis of symmetry intersecting said at least one end wall;

b. a controlled charge carrier device for operation at microwave frequencies supported within said shell, said device having first, second, and third terminals;

c. an RF input terminal supported in said shell electrically coupled to said first terminal;

d. means in said shell defining a first resonant cavity between the second and third terminals of said device radially of said axis and a second resonant cavity between said third terminal and said at least one end wall radially of said axis;

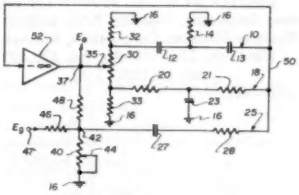
e. coupling means for transmitting electromagnetic energy from said first to said second cavity; and

f. a double-tuned radial resonant circuit being provided by the electromagnetic coupling of said cavities upon RF energy being supplied to the RF input, thereby energizing said device and said cavities to operate at microwave frequencies.

3,842,362
ADJUSTABLE PARALLEL-T NETWORK

Donald F. Dimon, Palatine, Ill., assignor to The Hallicrafters Co., Rolling Meadows, Ill.

Filed Dec. 20, 1972, Ser. No. 316,906
Int. Cl. H03f 1/36
U.S. Cl. 330—103 7 Claims



1. An active bandpass filter with an adjustable parallel-T network, comprising:

a high gain amplifier having an amplifier input, and an amplifier output which corresponds to the output of the bandpass filter;

a reference source of potential fixed with respect to signals at said amplifier input and amplifier output;

feedback means connected in shunt between said amplifier input and said amplifier output including a first branch having two resistive means in series and a capacitive means connected in shunt to said reference source, a second branch having two capacitive means in series and a resistive means connected in shunt to said reference source, a third branch including resistive means and capacitive means, center frequency adjustment means connected with said first and second branches and having an element variable to adjust the center frequency of said bandpass filter, damping adjustment means connected with said third branch and having an element variable to adjust the bandpass of said bandpass filter;

an input terminal for signals to be coupled to the filter;

first impedance means for connecting said input terminal to a junction between said damping adjustment means and said third branch; and

second impedance means coupling said junction to said amplifier output of said high gain amplifier.

3,842,363

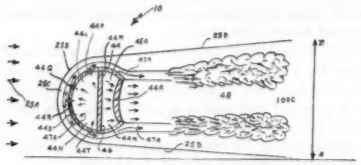
CHEMICAL LASER NOZZLE SYSTEM

Arthur Dobrzelecki, Albuquerque, N. Mex., and Richard C. Buggeln, Montgomery, Ala., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Oct. 24, 1972, Ser. No. 300,002

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 G **2 Claims**



1. In a nozzle system for use in a chemical laser having at least one nozzle and in which said chemical laser a first gaseous reactant, a second gaseous reactant, and a diluent gas flow, the improvement comprising

a plurality of hollow conduits disposed both in a transverse attitude to said nozzle, and also downstream of said nozzle, wherein each conduit of said plurality of hollow conduits is compartmentalized internally, one compartment having a first plurality of orifices for admitting one of said reactants into said flow, and

a second compartment having a second plurality of orifices for introducing said diluent into said flow.

3,842,364

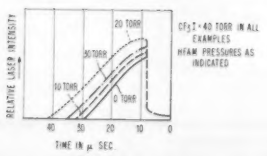
PHOTOCHEMICAL IODINE LASER

Rangaswamy Srinivasan, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,407

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **1 Claim**



1. A photochemical laser including an active material in a lasing cavity and optical pumping means for exciting said active material, the improvement comprising the use of perfluoromethyl iodide as the active medium and an additive of hexafluoroazomethane to said active material so that both said active material and said additive are photolyzed simultaneously by the operation of said optical pump.

3,842,365

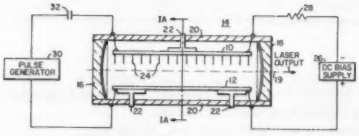
PULSE GLOW GENERATION FOR LASER SYSTEMS

Richard L. Hundstad, Pittsburgh, Pa., and Owen Farish, Bearsden, Glasgow, Scotland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1973, Ser. No. 365,388

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **6 Claims**



1. A high pressure gas laser apparatus and circuit for use in producing a laser output comprising:

an elongated envelope containing a gas medium at high pressure suitable for supporting a glow discharge,

first and second electrode means positioned within said envelope and spaced apart one from the other to define a uniform field discharge gap therebetween;

bias circuit means including an energy storage element connected between said first and second electrode means for maintaining a low current glow discharge therebetween;

said bias circuit further including charging means connected to said storage element for transferring energy to said storage element;

pulse generating means connected between said first and second electrode means for generating a pulse voltage; and

switching means responsive to said pulse voltage for selectively and electrically connecting said energy storage element to said discharge gap for transferring energy to said glow discharge during said pulses and isolating said energy storage element from said pulse generating means at all other times.

3,842,366

DOUBLE DISCHARGE, LARGE VOLUME EXCITATION GAS LASER

Richard Lee Gordon, Richland, and Errol V. Allen, Benton City, both of Wash., assignors to Battelle Memorial Institute, Columbia, Ohio

Filed Mar. 12, 1973, Ser. No. 340,541

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **20 Claims**

1. Gas laser apparatus in which the improvement comprises: an anode;

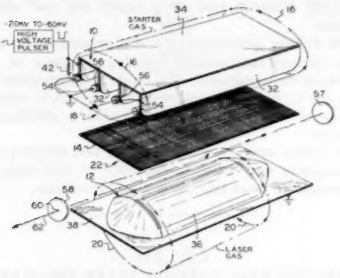
a cathode including at least one electron emitting element;

an intermediate electrode supported in spaced relationship between said anode and said cathode;

gas means for providing a starter gas in a first discharge space between said cathode and said intermediate electrode, and for providing a laser gas in a second discharge space between said intermediate electrode and said anode, said laser gas being of a different composition than said starter gas; and

discharge means for producing a first electrical discharge between said cathode and said intermediate electrode

through said starter gas, and for producing a second electrical discharge between said intermediate electrode



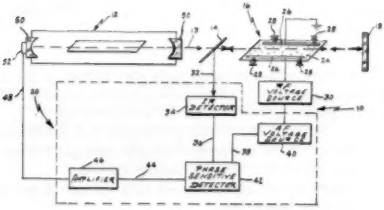
and said anode through said laser gas to cause the laser apparatus to produce a laser light beam output.

3,842,367

TECHNIQUE AND APPARATUS FOR STABILIZING THE FREQUENCY OF A GAS LASER

Howard Schlossberg, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 25, 1973, Ser. No. 354,263
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **5 Claims**



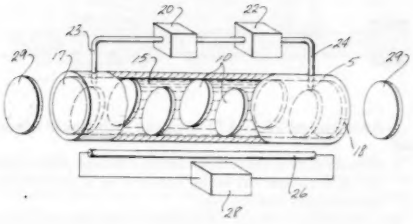
1. An apparatus for stabilizing the output of a laser at a desired frequency comprising an absorption cell in optical alignment with said laser output, means operably connected to said laser and to said absorption cell for passing said laser output twice through said absorption cell, said cell containing a gas and a pair of plates therein, an RF voltage source and an AF voltage source electrically connected together and to said plates for subjecting said gas to an RF field and an AF field in order to induce DC absorption sidelobes in said gas, said gas exhibiting a first order Stark effect, having an absorption line centered near the desired frequency for the laser output and having a pressure sufficiently low that (a) the absorption line of said gas is Doppler broadened and (b) the linewidth of said gas is substantially less than the RF frequency applied thereto, a phase sensitive detecting system operably connected to said AF voltage source and to the output emanating from said absorption cell after being twice passed therethrough, and means operably connecting said phase sensitive detecting system to said laser for varying said laser output in accordance with a signal from said phase sensitive detecting system whereby by applying said RF field at a frequency which is the difference between the desired operating frequency for the laser output and the frequency of the center of the absorption line of said gas said laser output can be locked to said desired frequency.

3,842,368

HYBRID LASER STRUCTURES

John D. Myers, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 21, 1973, Ser. No. 372,350
Int. Cl. H01s *3/20*
U.S. Cl. 331—94.5 **8 Claims**



1. A hybrid laser structure, in combination,

A. a plurality of lasable plate elements each spaced from its neighbor and in a path along the optical axis of said laser structure, and including means for maintaining said plate elements in said spaced relation, and

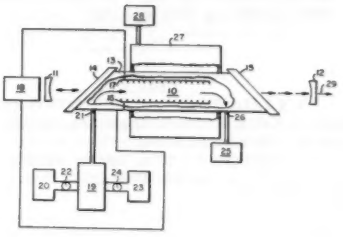
B. a lasable cooling liquid filling the spaces between said plate elements.

3,842,369

DIAZO CHEMICAL TRANSFER LASER

Nathan T. Melamed, and David C. Phillips, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,181
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **14 Claims**



1. A chemical transfer laser capable of producing stimulated laser emission, comprising:

a. an optical resonant laser cavity;

b. a laser gas selected from the group consisting of CO and CO_2 and mixtures thereof;

c. diazo gas;

d. means for mixing the laser gas with the diazo gas to form a gas mixture;

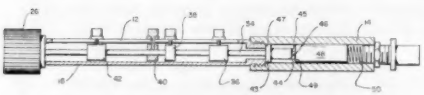
e. means for introducing said gas mixture into the resonant laser cavity; and

f. means for supplying excitation energy to the diazo gas of the gas mixture, to form an active laser medium comprising vibrationally excited laser gas by means of energy transfer by vibrationally excited nitrogen gas molecules formed by decomposition of the diazo gas.

3,842,370
COAXIAL TRAPATT OSCILLATOR OPERABLE AT A FIXED FREQUENCY AND AT A HIGH EFFICIENCY

Timothy T. Fong, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 22, 1973, Ser. No. 334,551
Int. Cl. H03b 7/14
U.S. Cl. 331—101 6 Claims

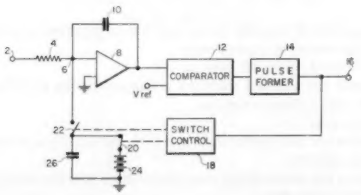


1. An improved TRAPATT oscillator including in combination:
   a. an inner conductor surrounded by a hollow outer conductor, said conductors being mounted in a predetermined spaced-apart relationship,
   b. a TRAPPATT diode electrically connected to said outer conductor,
   c. an impedance matching step transformer connected directly between said TRAPPATT diode and said inner conductor, said step transformer being substantially coaxial with said inner conductor and having a radial dimension thereof greater than the corresponding radial dimension of said inner conductor, said step transformer being operable to match the impedance of said TRAPATT diode with that of an oscillator load, as well as establish an optimum delay angle, θ_d, for the shock wave generated by said TRAPATT diode, said step transformer further establishing a relatively high gap capacitance, C_g, for handling large displacement currents flowing in said TRAPATT diode, and
   d. a plurality of tuning stubs slidably mounted between said inner and outer conductors for establishing a low pass filter section of said oscillator, the positions of said stubs establishing a particular value of impedance seen by said TRAPATT diode which corresponds to a preselected frequency for said oscillator when operating at a maximum DC–RF conversion efficiency, said efficiency determined by the diode's internal electrical characteristics, the impedance of said step transformer, said gap capacitance C_g and said delay angle θ_d.

3,842,371
VOLTAGE TO FREQUENCY CONVERTER

Thomas P. Kelley, Cornwells Heights, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 12, 1973, Ser. No. 405,811
Int. Cl. H03k 3/02
U.S. Cl. 331—143 7 Claims

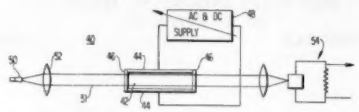


1. A voltage to frequency converter comprising
   a ramp signal generator for producing a ramp signal the slope of which is a function of the magnitude of an input voltage signal;
   a signal comparator connected to said ramp signal generator for comparing said ramp signal with a predetermined reference signal, said comparator being operative to produce an intermediate signal on the occurrence of equality between said ramp signal and said reference signal;
   a pulse former connected to said comparator and responsive to said intermediate signal to produce an output pulse on the occurrence of each such intermediate signal;
   a ramp signal generator resetting capacitor, means for charging said resetting capacitor to a predetermined charge;
   switch means operable in response to said output pulse for connecting said resetting capacitor to said ramp signal generator to reset said ramp signal generator.

3,842,372
EXTREMELY FAST GASEOUS STARK FIELD LIGHT MODULATORS AND Q-SWITCHED LASER FOR THE INFRARED WAVELENGTH REGION

Yoh-Han Pao, Cleveland Heights, and Paul C. Claspy, Middleburg Heights, both of Ohio, assignors to Data Optics Corporation

Continuation of Ser. No. 54,713, Aug. 14, 1970, abandoned. This application Aug. 22, 1972, Ser. No. 282,821
Int. Cl. H01s 3/10
U.S. Cl. 332—7.51 14 Claims



1. A Stark effect infrared light gas modulator for intensity modulating a substantially monochromatic infrared light beam at a frequency greater than 0.5 MHz comprising:
   a. a volume of molecular gas having non-linear molecules with permanent dipole moments, said gas having a pressure-broadened natural absorption line,
   b. means for directing through said volume of gas an infrared light beam, and
   c. means for exciting said gas with a varying electric field having a frequency greater than 0.5 MHz and no greater than the pressure-broadened bandwidth of the natural absorption line, whereby the intensity of said light beam is modulated by said electric field, and the intensity modulation is non-dispersive and is linear with respect to the strength of said field.

3,842,373
RADIATION CAMERA AND DELAY LINE READOUT

Victor Perez-Mendez, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 176,009, Aug. 31, 1971, Pat. No. 3,772,521. This application July 9, 1973, Ser. No. 377,504
Int. Cl. H03h 7/30
U.S. Cl. 333—31 R 6 Claims

1. A position indicating delay line having distributed signal access along its length in which the delay of the signal is proportionate to the distance from the point of signal application to at least one end thereof, comprising an elongate insulating plug having uniform cross-section throughout its length, a plurality of spaced parallel longitudinal conductive strips extending along the length of the plug to form a ground plane, a closely spaced conductive winding helically wrapped about said plug and nearly normal to said ground plane conductive strips to form an inductive winding thereon, a plurality of

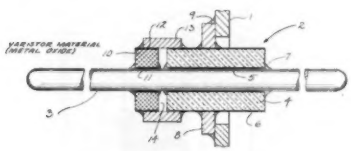
spaced parallel elongate strips positioned adjacent said winding and at an angle thereto, means forming a plurality of spaced conductors having portions positioned in closely

spaced relation to said helical windings and generally running in the same direction as said windings, means for terminating the end of said ground plane and said helical winding in a characteristic impedance at each end thereof.

3,842,374
FEEDTHROUGH FILTER WITH NON-LINEAR RESISTIVE DIELECTRIC

Heinz M. Schlicke, Fox Point, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 9, 1973, Ser. No. 339,569
Int. Cl. H03h 7/14
U.S. Cl. 333—79 **5 Claims**



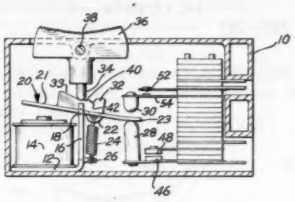
1. In a filter the combination comprising:
a feedthrough lead;
a dielectric encircling said lead having a first portion comprised of a titanate and a second portion comprised of a metal oxide varistor material with a high dielectric constant;
an electrode on one face of each of the dielectric portions in electrical connection with said feedthrough lead; and
a second electrode on an opposite face of each of said dielectric portions adapted for connection to a conductor in shunt relation to the feedthrough lead.

3,842,375
ELECTRICALLY HELD THREE POSITION CUTOUT SWITCH

Richard L. Collette, Hoffman Estates, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Jan. 4, 1974, Ser. No. 431,142
Int. Cl. H01h 9/20
U.S. Cl. 335—164 **10 Claims**

1. An improved switch device comprising, in combination:
a coil;
a biased armature pivotally mounted to pivot about a first axis with respect to said coil for movement toward and away from said coil in response to current and lack of current respectively through said coil; and
push button means pivotally mounted about a second axis parallel to the first axis, one of said push button means

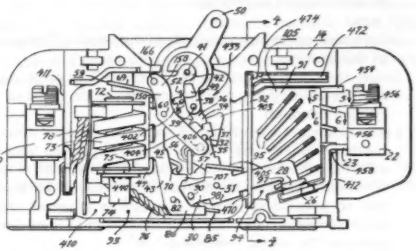


and said armature having a cooperative cam and the other having a cam follower projection, said cam and cam follower projection coacting to drive said armature about the first axis in a sense opposite the operated sense of said push button means.

3,842,376
FASTENER AND CIRCUIT BREAKER CASE

Charles Mune, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Division of Ser. No. 168,320, Aug. 2, 1971. This application Nov. 8, 1973, Ser. No. 413,777
Int. Cl. H01h 71/02
U.S. Cl. 335—202 **10 Claims**

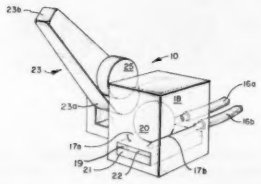


1. In a molded case circuit breaker,
a case of electrical insulating material,
a linkage mechanism and an electromagnetic device for actuating said linkage mechanism on predetermined overloads,
a movable contact and a stationary contact,
said linkage mechanism including a movable arm carrying said movable contact into and out of engagement with said stationary contact,
said electromagnetic device comprising
a frame having a leg,
a spool supported upon said leg, and
a tube,
said tube extending through said spool and said leg,
the improvement comprising
an upstanding tapered flange on said spool,
a pole piece attached to and overhanging said tube,
said spool being disposed between said pole piece and said leg, and
a spring fastener frictionally engaging a portion of said tube and abutting said leg, whereby said pole piece is held against said flange and said spool is held against said leg.

3,842,377
MAGNETIC SWITCH

Charles H. Barndt, Salt Lake City, Utah, assignor to Clemence G. Martin, Salt Lake City, Utah, a part interest

Filed July 5, 1973, Ser. No. 376,358
Int. Cl. H01h *21/00*
U.S. Cl. 335—207 **2 Claims**



1. A magnetic switch comprising

a closed housing formed of non-magnetic material, said housing having a top and a bottom and side walls interconnecting said top and said bottom;

parallel, contact members extending through a wall of the housing and into a plane in the lower portion of the housing;

a first magnet in the housing extending fully beneath the parallel contact members;

an electrically conductive ball of material attracted to the first magnet and adapted to simultaneously rest on the parallel contact members;

an arm;

a pivot shaft extending outwardly of the housing from a wall of the housing;

means mounting the arm on the pivot shaft to pivot alongside the housing in a plane transverse to the plane of the contact members;

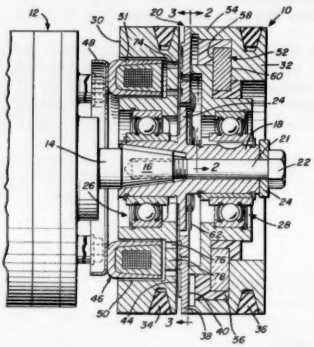
a second magnet mounted on the arm, between the arm and the housing whereby when said arm is pivoted between extreme raised and lowered positions, the second magnet is moved from a position wherein it does not attract the ball to a position wherein the ball is attracted theretowards and is raised out of contact with at least one of said parallel contact members.

3,842,378
DOUBLE CLUTCH FOR VEHICLE AIR CONDITIONING COMPRESSOR

William C. Pierce, Dallas, Tex., assignor to Pitts Industries, Inc., Dallas, Tex.

Filed July 20, 1973, Ser. No. 380,985
Int. Cl. H01f *7/08*
U.S. Cl. 335—220 **13 Claims**

1. In combination with a pair of axially spaced members and an armature axially displaceable into engagement with said members alternatively, torque transmitting control means comprising a pair of magnetic flux emitting devices respectively establishing mutually repelling magnetic fields extending from said axially spaced members on opposite axial sides of said armature, means respectively mounting said flux emitting devices within the axially spaced members for establishing a flux path through said armature common to both of said magnetic fields, and means for selectively collapsing one of the magnetic fields extending from one of the axially spaced members to effect axial displacement of the armature into engagement with the other of the axially spaced members, said armature being dimensionally restricted in an axial direction

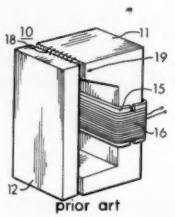


to substantially confine the magnetic fields between the axially spaced members to the common flux path through the armature.

3,842,379
FOLDABLE OUTER EXTENSIONS OF A LAMINATED CORE STRUCTURE

Gerald J. Barnett, Washington Township, N.J., assignor to Gem Electro-Magnetics Company, Inc., Fairfield, N.J.

Filed Aug. 28, 1973, Ser. No. 392,181
Int. Cl. H01f *3/00*
U.S. Cl. 335—297 **9 Claims**



1. A magnetic core structure which comprises a magnetically permeable laminar member, and a protective extension for said structure attached to said member and foldable with respect thereto, wherein said laminar member is the outer most member of a stack of laminations and said extension is foldable against the edges of the inner laminations.

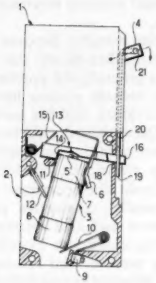
3,842,380
COMBINED CUT-OUT SWITCH AND CIRCUIT BREAKER

Jean Granson, Saint Quentin, and Jean Hennemann, Hombleres, both of France, assignors to UNELEC, Paris, France

Filed Oct. 10, 1973, Ser. No. 405,212
Claims priority, application France, Oct. 10, 1972, 72.35880
Int. Cl. H01h *85/00*
U.S. Cl. 337—6 **12 Claims**

1. In a combination cut-out switch and circuit-breaker including a manipulation element having removable plunger-type fuses respectively connected up in series, each with a pole of a disjunctor and co-operating with an auxiliary mechanism, the improvement wherein said mechanism comprises

two main parts, one forming a latch, the other a repeater, said latch having a position dependent on the state of the circuit-breaker and which ensures the locking of the position of the



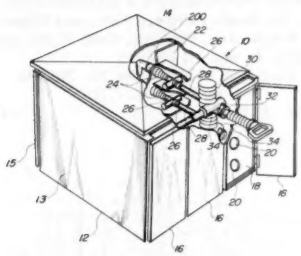
manipulation element of the said cut-out switch, when the said element has been brought to a position corresponding to an opening, whatever the original position may be.

3,842,381

INTEGRAL FUSE AND SWITCH SUPPORT FOR METAL-NCLOSED SWITCH GEAR

Joseph Bernatt, Arlington Heights, and Edward J. Rogers, Chicago, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Aug. 31, 1973, Ser. No. 393,289
Int. Cl. H01h *85/00*
U.S. Cl. 337—7 **27 Claims**



1. In a metal-enclosed circuit switching arrangement comprising feeder circuit conductors for providing a source of electrical power, load circuit conductors to an electrical load, a metal housing enclosing said conductors, whereby the improvement comprises:

a fuse having first and second ends;

a stationary fuse contact means mounted in the housing for disengageably engaging the first end of the fuse, a load circuit conductor being connected to said stationary fuse contact means;

isolator switch means mounted in the housing, a feeder circuit conductor being electrically connected to said isolator switch means;

a molded plastic insulator strut comprising:

first and second hollow turrets, said first turret being essentially aligned with said stationary fuse contact means;

guide means within said first turret for electrically engaging the second end of said fuse when the first end of said fuse engages said stationary fuse contact means;

switch contact means within said second turret for engaging and supporting said isolator switch means;

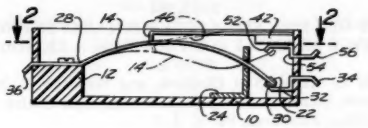
means for electrically interconnecting said guide means and said switch contact means so that an electrical circuit is completed between the feeder circuit connector and the load connector when said fuse is engaged by said stationary contact means and said guide means, and said isolator switch means is closed.

3,842,382

ELECTRO-THERMAL RELAY ACTUATOR

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Arcadia, Calif.

Filed July 19, 1973, Ser. No. 380,841
Int. Cl. H01h *61/02*
U.S. Cl. 337—107 **18 Claims**



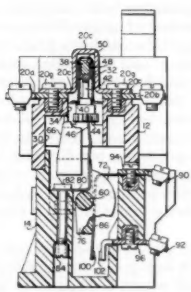
1. An actuator mechanism comprising a bimetal strip, the bimetal strip including two contiguous sections having opposite bending action with change in temperature, a thin coating of electrical insulation bonded to a portion of the surface of the strip, a thin electrically resistive heater layer bonded to the surface of the coating and being positioned on only one of said sections of the bimetal strip, the insulation coating being sufficiently thin to provide good thermal conductivity between the resistive layer and the bimetal, means for connecting a source of electrical current across the resistive layer, and means supporting the strip at one end in cantilever fashion, the other end of the strip being movable with bending of said one section by the resistive layer.

3,842,383

ELECTRIC CONTROL DEVICE

Paul T. Anderson, and James B. Ramsey, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,241
Int. Cl. H01h *71/20*
U.S. Cl. 337—151 **6 Claims**



1. An electric control device comprising a plurality of pole units, a stationary contact, a movable contact, a movable contact mounting member biasing the contacts in a closed position, means for actuating the contacts to the open position and comprising a cam shaft having a first arm for each pole

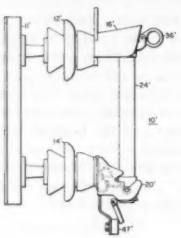
unit and rotatable between latched and unlatched positions corresponding respectively to the closed and open positions of the contacts and being biased in the latched position, means responsive to an overload current and associated with each of the pole units for actuating at least one first arm of the cam shaft to the unlatched position when an electric overload occurs in at least one of the pole units, reset means operatively connected to the cam shaft for rotating the cam shaft to the latched position, the reset means comprising a manually operated reset rod movable between retracted and resetting positions, the cam shaft having a second arm in the path of movement of the reset rod, and the reset rod being biased in the retracted position and movable against the second arm to rotate the cam shaft in one direction opposite that of the first arm.

3,842,384

DROP-OUT FUSE STRUCTURE WITH LEAF SPRING IN HINGE ASSEMBLY FOR PROVIDING A KICKOUT FORCE

Harold L. Miller, West Elizabeth, and Woodrow G. Shaw, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,468
Int. Cl. H01h 71/10
U.S. Cl. 337—171 **2 Claims**



1. A fuse drop-out assembly, comprising:

A. a support member for supporting parts of said fuse drop-out assembly;

B. a fuse means including:

a fusible element,

a fuse holder in which said fusible element is disposed,

a first electrically conducting ferrule disposed on a first portion of said fuse holder and electrically connected to a first portion of said fusible element,

a second electrically conducting ferrule disposed on another portion of said fuse holder, spaced from said first portion of said fuse holder and electrically connected to a second portion of said fusible element spaced from said first portion of said fusible element, and including as part thereof a second-ferrule force transmitting member, a pivot member disposed on said secondary electrically conducting ferrule, said pivot member being adapted to allow said interconnected first and second ferrules, and said fuse holder to rotate thereabout;

C. a first bracket means disposed on said support member, and adapted to engage said first ferrule of said fuse means when said fuse means is disposed in said fuse drop-out assembly in a manner to protect an external electrical circuit, said first bracket means including an electrically conducting member disposed in said first bracket to electrically interconnect a portion of said external electrical circuit and said first ferrule when said fuse is disposed in said fuse assembly to protect said external circuit; and

D. a second bracket means disposed on said support member and spaced from said first bracket means in engagement with said pivot member of said second ferrule of said fuse means including:

an electrically conducting member disposed in said second bracket means to electrically interconnect another portion of said external electrical circuit and said second ferrule,

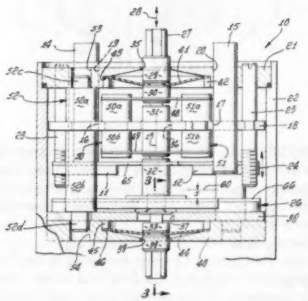
a resilient spring member disposed adjacent a portion of said second bracket means, said resilient spring member having a generally flat portion and adjacent thereto a generally arcuate portion having a predetermined radius of curvature, said flat portion being the portion disposed adjacent said second bracket means and being fastened thereto, said resilient spring member not being significantly electrically conductive to said external electrical circuit when compared with the conductance of other parallel conductive paths of said second bracket means and said second ferrule, said spring member being chargeable by said second-ferrule force transmitting member and residing thereagainst while said fuse is disposed in said fuse assembly in a position to protect said external circuit, said arcuate portion being disposed closer to said support member after said charging of said resilient spring member than when said resilient member is in an unchanged state, said radius of curvature of said arcuate portion being larger than said predetermined value as a result thereof, said spring member being dischargeable against said second-ferrule force transmitting member after fusing to thus move said second-ferrule force transmitting member to thus rotate said second ferrule to thus disengage said first ferrule from said first bracket means and thereby provide an electrically insulating gap between said first and said second bracket means.

3,842,385

HIGH PERFORMANCE TRANSDUCER

Herbert H. Ast, Pacific Palisades, Calif., and Wilson Bradley, Jr., 180 S. Lake Ave., Pasadena, Calif. 91101, assignors to said Bradley, by said Ast

Filed Sept. 13, 1973, Ser. No. 396,744
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R **19 Claims**



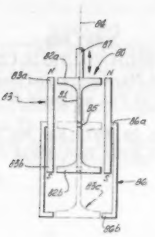
1. In a transducer for providing an electrical output that varies as a function of a displacement input, the combination comprising

a. spaced poles of opposite polarity,

b. a magnetic flux transmitting armature relatively movable longitudinally toward and away from the poles to increase and decrease, respectively, the flux transmission by the armature,

c. a flux responsive element carried by the armature to pass said flux, said element characterized as having electrical impedance which varies as a function of the intensity of the flux passed by the element, and

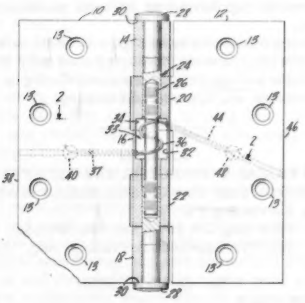
d. the armature having an overall range of movement between limits at one of which the flux transmission by the element is at a maximum, and there being means cooperating with the armature to cause the flux passed by said element to drop to near zero when the armature is at the other of said limits.



3,842,386
HINGE FOR PASSING ELECTRICAL CURRENT

Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Continuation of Ser. No. 273,483, July 20, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,022
Int. Cl. H02g *11/00*
U.S. Cl. 339—4 **6 Claims**

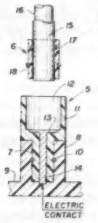


1. A load bearing hinge for mounting a a door in a door frame and for passing electrical current between the door and frame through a concealed and tamper-proof electrical wire comprising a pair of adjacent flat hinge leaves of substantially uniform thickness having front and rear exterior surfaces, openings in the leaves to secure them to the door and frame with their rear surfaces abutting the door and frame, at least two axially aligned and closely spaced hinge knuckles, one of said knuckles extending from each adjacent leaf edge, at least one hinge pin axially received in said knuckles to secure them in axial alignment while permitting relative pivotal movement about said aligned axes, means providing a recess within at least one of the knuckles, a concealed tunnel in each leaf generally parallel to the front and rear exterior surfaces thereof and extending through the knuckle associated with the leaf to said recess, an opening in the rear exterior surface of each hinge leaf communicating with the corresponding tunnel in the leaf, the openings in the rear exterior surfaces of the leaves being sufficiently spaced from their respective knuckles by said tunnels to permit the openings to be hidden from view by the door and door frame when the hinge is installed on the door and door frame, the hinge when installed giving the outward appearance of a conventional load bearing door hinge, a continuous and concealed passage from the rear exterior surface of one hinge leaf to the rear exterior surface of the other hinge leaf being formed by the two openings in the hinge leaves, the tunnels in the leaves and the recess, and at least one electrical wire threaded through the continuous passage for conducting electrical current through the hinge and concealed from view and protected from damage by the hinge leaf material and knuckle material when the hinge is mounted on the door and door frame.

3,842,387
ADAPTOR FOR SPARK PLUG WIRES TO DISTRIBUTOR CAP

Carmine A. Santangelo, 85 Ann St., Apt. 2B, Staten Island, N.Y. 10302

Filed Mar. 27, 1973, Ser. No. 345,282
Int. Cl. H01r *13/54*
U.S. Cl. 339—26 **1 Claim**



1. An adaptor for connecting a spark plug wire to a distributor cap comprising: a lower part, said lower part having a depending stud of circular cross-section and having a diameter and length for proper retention by a socket of the distributor cap, a first groove circumferentially cut in said stud, a first "O" ring fitted in said first groove and extending beyond the surface of said stud for enhancing the retention of said stud within the socket of the distributor cap, a receiving extension integral with and extending upwardly from said stud, said receiving extension having a recess of circular cross-section, and an electrical conductor having a head within said recess and a stem extending coaxially through and beyond the end of said stud; and an upper part, having a cylindrical sleeve, at least a first portion of said sleeve having a length corresponding to the length of the recess of said receiving extension an outside diameter for reception into the recess of said receiving extension and an inside diameter a sufficient size to snugly accept a spark plug wire, a second groove circumferentially cut in said first portion of said cylindrical sleeve, a second "O" ring fitted in said second groove and extending beyond the outer surface of said first portion of said cylindrical sleeve for enhancing the retention of said cylindrical sleeve within the recess of said receiving extension, and said cylindrical sleeve having a second portion integral with said first portion and extending beyond the recess of said receiving extension; the cross-section of said second portion being geometrically similar to the cross-section of said extension.

3,842,388
LATCHING SYSTEM FOR AN ELECTRICAL CONNECTOR PLUG AND ASSEMBLY

Robert George Harwood, Mechanicsburg, and Charles Donald Hoover, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

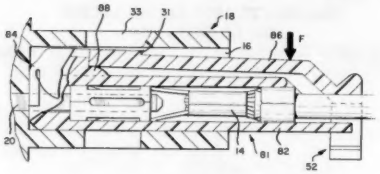
Filed Nov. 28, 1972, Ser. No. 310,061
Int. Cl. H01r *13/54*
U.S. Cl. 339—59 R **1 Claim**

1. A latchable electrical connector plug capable of being plugged into a receptacle in a closely packed array of addi-

tional plugs and receptacles, each said receptacle having a female cavity, a male contact fixed in said cavity and a latching window in one side wall of said cavity and each said plug having a female receptacle contact mounted therein, said connector plug comprising:

an elongated body of resiliently deformable material having central bore extending between forward and rearward end portions, a locking lance receiving aperture in a side wall of said bore for fixedly retaining said female contact therein, and at least said forward end of said body having a profile adapted to be received within said cavity,

latching means hingedly connected to said forward end of said body and extending in general alignment with and along said body, said latching means including a latching



lug extending outwardly of said latching means at a point in general alignment for engagement with aid latching window,

a protuberance extending outwardly from said body adjacent the hinged connection of said latching means and adapted to engage said latching means,

resiliently deformable locking means on the free end of said latching means, said locking means encircling opposite sides of the rearward end of said body and holding said latching means resiliently deformed about the protuberance for relative movement toward the plug against inherent biasing of the latching means caused by its deformation, whereby a predetermined displacement of said latching means is sufficient to allow the latching lug to be inserted into and withdrawn from said latching window.

3,842,389

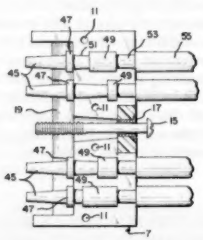
FIELD REPAIRABLE HIGH VOLTAGE CONNECTOR

Douglas Wade Glover, Harrisburg, and Kenneth Oscar Kopenhaver, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1973, Ser. No. 390,810

Int. Cl. H01r *13/52*

U.S. Cl. 339—60 M **16 Claims**



1. A high voltage connector which comprises,

a. a socket including a pair of mating housing portions, each housing portion having plural sets of grooves which mate with plural sets of grooves in the other housing portion,

b. a resilient boot positioned in a mating pair of said grooves, said boot including a pair of spaced O-rings integral therewith, one of said O-rings positioned intermediate the two axial ends of said groove and the other O-ring positioned beyond and in intimate contact with one end of said groove, said one of said O-rings forming a seal with said housing portions.

3,842,390

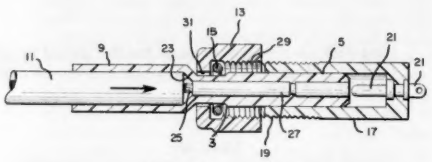
LOW COST HIGH VOLTAGE CONNECTOR

Douglas Wade Glover, Harrisburg, and Henry Otto Herrmann, Jr., Mt. Joy, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 20, 1973, Ser. No. 390,142

Int. Cl. H01r *3/06;* **H014** *13/52*

U.S. Cl. 339—14 R **10 Claims**



1. A high voltage electrical connector which comprises, in combination,

a. a barrel of electrically insulating material, said barrel including a central groove and a hollow interior, said hollow interior including sections of differing cross-section and a shoulder therebetween,

b. a threaded cap having an aperture positioned in said groove,

c. an O-ring positioned in said groove within said cap and

d. a threaded housing positioned over said barrel and threadable with said cap to place said O-ring in compression between said cap and said housing.

3,842,391

ELECTRICAL CONNECTOR TAB RECEPTACLE

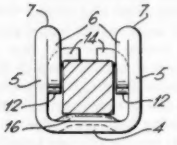
Helen Dechelette, Saint Cloud, France, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 20, 1973, Ser. No. 389,852

Claims priority, application France, Aug. 30, 1972, 72.30768

Int. Cl. H01r *27/00*

U.S. Cl. 339—32 R **3 Claims**



1. An electrical connector comprising a generally channel-shaped receptacle having a base from which extend two upstanding side walls, the side walls each having an extension bent back inwardly of the channel towards the base to present a free edge spaced from the base for gripping resiliently a male terminal between the free edges and the base, each bent-back extension being arranged generally flat against the associated side wall, a portion of each side wall and bent-back extension being removed along the bend of the side wall and extension

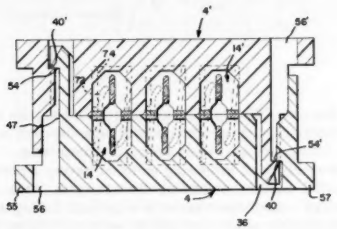
intermediate the two axial ends of the side wall, and each free edge projecting further towards the base at an intermediate portion corresponding to the removed portion.

3,842,392

PRE-LOADED ELECTRICAL CONNECTORS, ASSEMBLY APPARATUS AND METHOD

Lionel Dennis Aldridge, Seminole, and Edward Dennman Bunnell, Palm Harbor, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 8, 1973, Ser. No. 321,505
Int. Cl. H01r *9/08*
U.S. Cl. 339—47 R **12 Claims**



1. First and second electrical connectors, said connectors being pre-loaded with electrical contact terminals to which conductors can be attached, said connectors being mateable with each other,

said first and second connectors each comprising an insulating, housing having a mating face and a rearward face, said mating faces being against each other when said connectors are coupled, a plurality of contact receiving cavities extending into said housing from said mating face, said cavities being in side-by-side relationship and forming a row,

an electrical contact terminal in each of said cavities, each of said contact terminals comprising a contact portion and a conductor-receiving portion,

each of said conductor-receiving portions having a conductor receiving slot means extending inwardly in a direction normal to said mating face, said slot means being side-by-side in said row and each slot means being adapted to receive a conductor which extends across said mating face and across said row upon movement of said conductor laterally of its axis towards said mating face and into said slot means,

each of said contact portions having contact surfaces which are proximate to said mating face and which are adapted to engage, and form an electrical connection with, complementary contact surfaces upon relative movement of said complementary contact surfaces towards said mating face and into engagement with said contact surfaces,

said contact surfaces of said contact terminals in one of said connectors being complementary to said contact surfaces of said contact terminals in the other one of said connectors whereby,

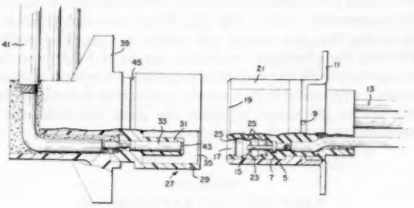
predetermined conductors can be connected to said terminals in said first and second connectors by positioning said first and second connectors adjacent to each other with their mating faces in side-by-side relationship and facing in the same direction, locating said conductors with their axes extending across said mating faces and in alignment with said conductor-receiving slot means of each of two corresponding terminals in said first and second connectors, moving said conductors laterally of their axes into said slot means, and cutting out the portion of each conductor which is between each corresponding pair of terminals.

3,842,393

MICROMINIATURE MULTI-PIN CONNECTOR

Douglas Wade Glover, Harrisburg; Kenneth Oscar Kopenhaver, Hershey, and Ralph Larry Geib, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1973, Ser. No. 390,811
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 M **12 Claims**



1. A microminiature mutli-pin high voltage connector which comprises,

a. a receptacle, said receptacle including plural electrical connecting terminals, each of said terminals being encased in a rigid material of substantially circular cross-section, and

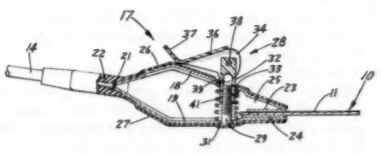
b. a socket, said socket including a rigid outer body with a resilient insert bonded therein, said insert including plural apertures and an electrical terminal in each said aperture for mating with the terminals of said receptacle, said apertures being defined by an undulating surface having ridges and valleys, the diameter of said rigid material of circular cross-section being intermediate the cross-section through said ridges and said valleys.

3,842,394

ELECTRICAL CONNECTOR FOR PLATE ELECTRODE

Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minnetonka, Minn.

Filed Mar. 6, 1973, Ser. No. 338,455
Int. Cl. H01r *11/22*
U.S. Cl. 339—75 R **51 Claims**



1. A plate electrode for engaging the surface of a body and an electrical connector comprising: a plate electrode having an electrically conductive means, said electrically conductive means having a substantial surface area for surface engagement with the surface of the body to make a large surface electrical contact between the electrically conductive means and the body, and an electrical connector releasably attached to said plate electrode, said electrical connector having electrical conductor means located in substantial surface engagement with the electrically conductive means, first jaw means located on one side of said plate electrode, and second jaw means located on the opposite side of said plate electrode, said electrical connector means being attached to at least one of said jaw means, and releasable lock means operable to a first position to move the first and second jaw means together to thereby clamp the electrical conductor means in surface

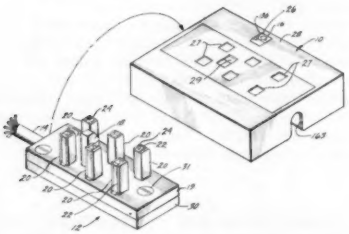
engagement with the electrically conductive means and movable to a second position to release the first and second jaw means to thereby release the clamp of the electrical conductor means from the electrically conductive means, said releasable lock means including first means mounted on the first jaw means and projected through holes in the first and second jaw means, said first means including a first member and a second member adjustably connected to the first member, cam means pivotally connected to said first means and engageable with the second jaw means, and second means secured to the cam means operable to move the cam means to a first position to locate the first and second jaw means in a clamped position whereby the electrical conductor means is held in surface engagement with the electrically conductive means, said cam means being movable to a second position to release the first and second jaw means whereby the plate electrode can be separated from the electrical connector.

3,842,395

JACK OR PLUG RECEPTACLE

Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.

Filed Dec. 6, 1972, Ser. No. 312,609
Int. Cl. H01r *13/38, 13/54*
U.S. Cl. 339—91 R **14 Claims**



1. A plug receptacle for a multistab plug with each stab of the plug having an electrical blade contact, the receptacle comprising:

a. a base;

b. means on the base for defining a slide guide;

c. means on the base for defining a tongue guide aligned with the slide guide;

d. means on the base for defining latch well between the slide guide and the tongue guide, and opening into the slide guide and tongue guide, the slide guide, tongue guide and latch well defining a translational path, the latch well having walls substantially parallel to the path;

e. a latch disposed for translation along the translational path and being selectively operable to accept and firmly hold a cooperating catch of the plug to secure the plug and the plug receptacle together, the latch including:

i. a body having first and second opposite ends and being slidably disposed in the latch well between the slide guide and the tongue guide;

ii. a slide extending from the first end of the body into the slide guide;

iii. a tongue extending from the second end of the body into the tongue guide;

iv. means for contacting the walls of the latch well to maintain angular stability of the latch;

f. a plurality of receptacle contacts mounted in the base for each receptacle contact to engage a separate associated one of the blade contacts of the plug; and

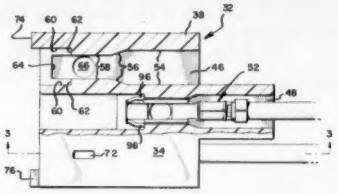
g. a cover on the base, the cover having an elastically deformable roof for bearing on and displacement by the plug for the stationary engagement of the receptacle contacts by the blade contacts.

3,842,396

CLUSTER BLOCK HOUSING AND PIN RECEPTACLE

Billy Erik Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 27, 1973, Ser. No. 354,961
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **4 Claims**



1. A disengagable electrical connector for use with a plurality of closely spaced parallel contact pins disposed in a cup-like mounting member, said connector comprising:

a unitary block of insulating material having a plurality of parallel cavities extending therethrough, each of said cavities being open at both ends and having a throat portion defined by a pair of side walls converging towards one another to merge with a pair of parallel walls which terminate in sharp shoulders extending transversely outwardly of the cavity, an abutment extending transversely across said cavity spaced from said shoulders, and a pin aperture formed in one wall of each cavity,

a terminal connector received in each said cavity, each said connector having, from back to front, first and second ferrule portions adapted to be crimped onto electrical cable and a channel shaped receptacle portion including two spaced side walls resiliently integrally connected by one edge to a central web, an aperture in said central web, and a locking lance rigidly projecting from an upper portion of each side wall, each said lance projecting out of the plane of its corresponsing side wall and away from the other said side wall, said side walls of said connector located between said parallel walls of said housing as said locking lances abut said shoulders, retaining said connector in said housing, said pins adapted to engage with interference fit in opposing sides of said connector aperture and between the side walls of said receptacle portion.

3,842,397

ULTRASONIC DISTANCE DETECTION FOR VEHICLES

Thomas Sindle, 15 Roosevelt St., Staten Island, N.Y. 10304

Filed Aug. 27, 1973, Ser. No. 391,087
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 R **5 Claims**

1. An ultrasonic distance determining device for use on vehicles and the like comprising:

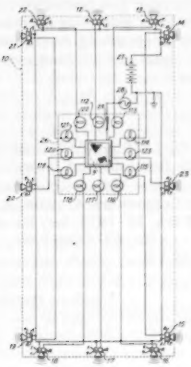
a plurality of ultrasonic transducers each located along the sides of the vehicle;

transmitter means having its input coupled to each of said transducers, said transmitter means comprising an individual transmitter coupled to the input of said transducers; receiver means coupled to each of said transducers, said receiver means comprising an individual receiver coupled to the output of each of said transducers;

switch means coupled to the input of said transmitter means and said receiver means so as to selectively operate said transmitter means for each of said transducers and then operate said receiver means for a predetermined time interval; and

indication means comprising a plurality of indicating lamps wherein each of said lamps are connected to the output

of each of said receivers for providing an indication of the proximity of external objects located a predetermined



distance from the vehicle corresponding to the predetermined time interval of the receiver for each of said transducers.

3,842,398

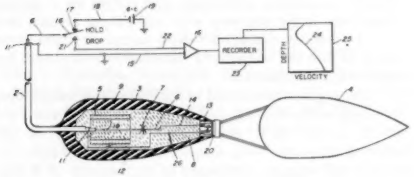
APPARATUS AND METHOD FOR DEPLOYMENT OF EXPENDABLE VELOCIMETER TO ELIMINATE DOPPLER SHIFT ERROR IN THE MEASUREMENTS

Donald P. Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed May 8, 1972, Ser. No. 251,383

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 S **8 Claims**



1. In a system for directly measuring the sound velocity vs. depth profile along a vertical axis in a body of water, velocimeter means responsive to the velocity of sound in the immediate vicinity of said velocimeter for generating an acoustic signal in said water, said signal having a frequency which is proportional to said velocity of sound, signal pickup means including a length of electrical cable towing a hydrophone for converting said acoustic signal into an electrical signal, means for releasably securing said velocimeter in close proximity to said hydrophone during said tow, and means responsive to a command signal for releasing said securing means to drop said velocimeter from the point where said hydrophone is located at the instant of drop.

3,842,399

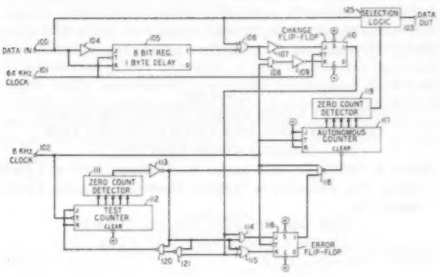
REPETITIVE BYTE RECOGNITION CIRCUIT

Joseph George Kneuer, Fair Haven, and William Joseph Lawless, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 2, 1974, Ser. No. 429,563

Int. Cl. H04l *1/08*

U.S. Cl. 340—146.1 BA **10 Claims**



1. A circuit for recovering multibit data bytes encoded into successive groups of n repetitive data bytes, comprising,

means for selecting every n^{th} one of the encoded data bytes;

means for detecting mismatches in corresponding bits of successive encoded data bytes; and

means repsonsive to the mismatch detection for aligning, in time, the operation of the selecting means.

3,842,400

METHOD AND CIRCUIT ARRANGEMENT FOR DECODING AND CORRECTING INFORMATION TRANSMITTED IN A CONVOLUTIONAL CODE

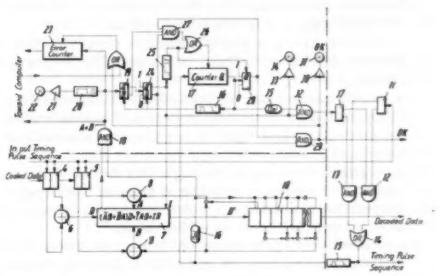
Gustav Liefeld, and Charles Kurvin, both of Ottobrunn, Germany, assignors to Messrschmitt-Bolkow-blohm GmbH, Munich, Germany

Filed Dec. 1, 1972, Ser. No. 311,383

Claims priority, application Germany, Dec. 18, 1971, 2163105

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AQ **12 Claims**



1. A method of decoding and correcting a data sequence expressed in a convolutional code, and transmitted as two sequences of parity bits generated, from the information to be coded, by respective generator matrices and which sequences are formed by modulo-2-adders at selected places of a shift register adjusted to the constraint length of the code, the sequence differing at only one place of the shift register, said

method comprising the steps of combining successive received parity bits by modulo-2-addition to form pairs of parity bits in a data sequence D; thereafter decoding, wite a time delay, the two parity bits of each pair to form respective data sequences A and B; the parity bits belonging to the information to be coded, due to the time delay, standing at the same place in each of the data sequences A, B and D; comparing the data sequences A, B and D to derive a data sequence D′ containing the uncoded information; and transmitting the data sequence D′, bit by bit, in accordance with the conditions:

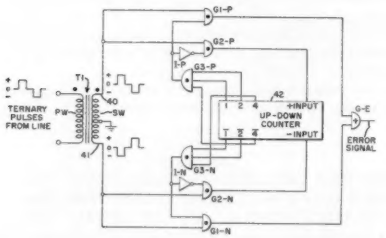
1 whenever A = B = D, D′ = D
2 whenever A = B D, D′ = D
3, whenever A B, D′ = D;

where the condition "2" signifies a correction.

3,842,401
TERNARY CODE ERROR DETECTOR FOR A TIME-DIVISION MULTIPLEX, PULSE-CODE MODULATION SYSTEM

James S. Smith, Jr., and James W. Williams, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Sept. 10, 1973, Ser. No. 395,833
Int. Cl. H04b *1/66*; **G08c** *25/00*; **H03k** *13/32*
U.S. Cl. 340—146.1 AB **3 Claims**



1. For use in a time-division multiplex, pulse-code modulation system using a ternary code, an error detector for indicating that the net positive ternary pulse count exceeds a selected limit and for indicating that the net negative ternary pulse count exceeds a selected limit, said error detector comprising:

a. a first circuit adapted to be connected to said system for responding to positive ternary pulses;

b. a second circuit adapted to be connected to said system for responding to negative ternary pulses;

c. a counter having a positive input, a negative input, a plurality of normal outputs, and a plurality of inverted outputs;

d. a positive counter gate having a plurality of inputs respectively connected to selected ones of said counter outputs for producing a first signal in response to a selected positive count in said counter;

e. a negative counter gate having a plurality of inputs respectively connected to selected ones of said counter outputs for producing a second signal in response to a selected negative count in said counter;

f. a positive control gate connected between said first circuit and said positive input of said counter for applying positive ternary pulses thereto, said positive control gate being connected to the output of said positive counter gate for blocking said positive ternary pulses in response to said first signal;

g. a negative control gate connected between said second circuit and said negative input of said counter for applying negative ternary pulses thereto, said negative control gate being connected to the output of said negative counter gate for blocking said negative ternary pulses in response to said second signal;

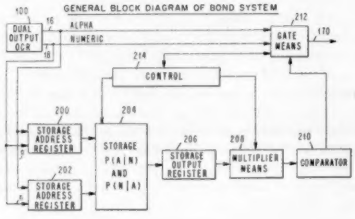
h. a positive error gate connected to said first circuit, said positive error gate being connected to said positive counter gate for producing an error signal in response to said first signal and a subsequently received positive ternary pulse;

i. and a negative error gate connected to said second circuit, said negative error gate being connected to said negative counter gate for producing an error signal in response to said second signal and a subsequently received negative ternary pulse.

3,842,402
BAYESIAN ONLINE NUMERIC DISCRIMINATOR

Allen Harold Ett, Bethesda, and Walter Steven Rosenbaum, Silver Spring, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,526
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 S **2 Claims**



1. An apparatus for discriminating the alphabetic or numeric character of a character field scanned by an optical character recognition machine, comprising:

an optical character recognition machine adapted to sequentially scan the characters in a character field, analyze the features of each character scanned, compare the features of each character scanned with a first matrix of stored features of alphabetic characters, output on a first output line the alphabetic character whose stored features most nearly match the features of each character scanned, for all characters scanned, compare the features of each character scanned with a second matrix of stored features of numeric characters and output on a second output line in synchronism with said output on said first line, a numeric character whose stored features most nearly match the features of the character scanned, for each character scanned;

a first shift register connected to said first OCR output line, for sequentially loading and storing the alphabetic field which is the OCR alphabetic interpretation of the scanned character field, outputted on said first line;

a second shift register connected to said second OCR output line, for sequentially loading and storing the numeric field which is the OCR numeric interpretation of the scanned character field, outputted on said second line;

a first storage address register connected to said first OCR output line for sequentially storing each alphabetic character in the alphabetic field outputted on said first OCR output line;

a second storage address register connected to said second OCR output line for sequentially storing each numeric character in the numeric field outputted on said second OCR output line;

a first storage means connected to said first and second storage address registers, having stored therein the conditional probabilities that a certain alphabetic character was inferred by the OCR given that a certain numeric character was scanned, for all combinations of alphabetic characters with numeric characters, said first storage

means being accessed by the contents of said first and second storage address registers to yield the conditional probability that the numeric character stored in the second storage address register was misread by the OCR as the alphabetic character stored in the first storage address register;

a second storage means connected to said first and second storage address registers, having stored therein the conditional probabilities that a certain numeric character was inferred by the OCR given that a certain alphabetic character was scanned, for all combinations of alphabetic characters with numeric characters, said second storage means being accessed by the contents of said first and second storage address registers to yield the conditional probability that the alphabetic character stored in the first storage address register was misread by the OCR as the numeric character stored in the second storage address register;

a first storage output register connected to said first storage means for sequentially storing each conditional probability value accessed from said first storage means by said first storage address register;

a second storage output register connected to said second storage means for sequentially storing each conditional probability value accessed from said second storage means by said second storage address register;

a first multiplier means connected to said first storage output register for calculating the product of all the conditional probabilities accessed from said first storage means, said product being a first total conditional probability that all numeric characters stored in the second shift register were misread by the OCR as the alphabetic characters stored in said first shift register;

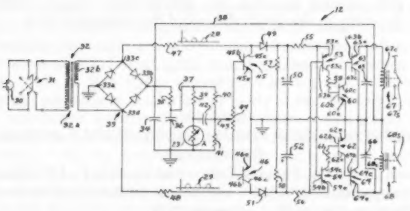
a second multiplier means connected to said second storage output register for calculating the product of all the conditional probabilities accessed from said second storage means, said product being a second total conditional probability that all the alphabetic characters stored in the first shift register were misread by the OCR as the numeric characters stored in said second shift register;

a comparator connected to said first and second multiplier means for comparing the magnitudes of said first and second total conditional probabilities and outputting an indication that a scanned character field is alphabetic if said second total conditional probability, is greater than said first total conditional probability, or is numeric if said first total conditional probability is greater than said second total conditional probability.

3,842,403
OPTICAL REMOTE CONTROL SYSTEM

John G. Konopka, Mundelein, Ill., assignor to Warwick Electronics, Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,318
Int. Cl. H04q 1/00; G08b 13/18
U.S. Cl. 340—170 **8 Claims**

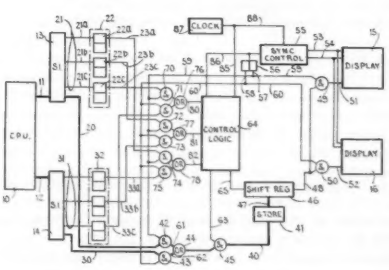


1. A remote control for use with a power supply providing alternating current power, comprising: a transmitter connected to said power supply having means for transmitting a signal during an interval of time corresponding selectively to either the positive going or negative going portion of said alternating current power, said transmitter including radiation means, first and second diodes, and switch means connected in circuit with said first and second diodes and said radiation means whereby either said first or said second diode may be connected in series with said radiation means; and a receiver connected to said power supply to have phase correlation with the transmitter and having means for detecting the transmitted signal and means providing selectively different outputs corresponding to the time at which said signal is transmitted, said receiver including a pair of electronic switches, one switch being responsive to a signal transmitted during an interval of time corresponding to the negative going portion of said alternating current power to provide a first output and the other switch being responsive to a signal transmitted during an interval of time corresponding to the positive going portion of said alternating current power to provide a second output, and means for causing operation of one or the other of said switches.

3,842,404
DATA DISPLAY

Keith Jeremy Crook, Hitchin, England, assignor to International Computers Limited, London, England

Continuation-in-part of Ser. No. 219,737, Jan. 21, 1972. This application Sept. 25, 1973, Ser. No. 400,676
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **5 Claims**



1. In a data display system comprising a data processor and a plurality of high speed repetitive display units, means for interconnecting said processor and said units comprising:

timing means for producing sequencing signals for selecting each of said display units in turn;

a plurality of signal channels from said processor, one for each display unit, each channel comprising separate command and data signal paths;

data signal storage means, common to all said data signal paths;

first switching means, responsive to said sequencing signals, for connecting the data signal path corresponding to the currently selected display unit to the data storage means;

second switching means, responsive to said sequencing signals, for applying data from the data storage means to the currently selected display unit for updating the display provided by that unit;

a plurality of command signal storage means respectively connected to said command signal paths, each command storage means thus being capable of having command signals written into it from its corresponding command signal path during periods when the corresponding display unit is not selected;

third switching means, responsive to said sequencing

signals, for selecting command signals from the command storage means corresponding to the currently selected display unit; and

control means responsive to the command signals so selected by said third switching means to control read in and read out of data to and from said data storage means.

3,842,405

COMMUNICATIONS CONTROL UNIT

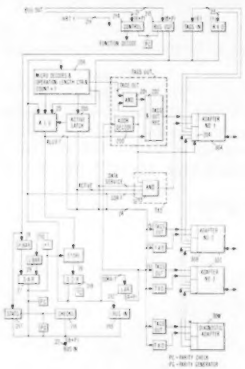
Brian D. Key, Winchester; Michael L. Kingdom Hockings; Michael N. G. Lovelace, both of Chandlers Ford; Howard C. Rankin, Southampton, and Jonathan B. Stredwick, Chandlers Ford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,441

Claims priority, application Great Britain, Mar. 2, 1971, 5880/71

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 6 Claims



1. In a data processing system having a plurality of communication lines interconnecting a central processor with different types of terminals by way of modems terminating both ends of each line and means within the processor producing signals for controlling data transfer between the processor and the terminals, an integrated control unit comprising

a plurality of similar adapters having means for storing tags, each adapter coupling a respective one of the lines to the control unit,

a store storing a group of microinstructions for each line, each group including control, timing and data service instructions for respectively monitoring lines for incoming data and control signals, synchronizing the control unit with line data rates, and controlling data transfers between the lines and the store,

each timing instruction having an initial count value which is a function of the rate at which data is transmitted over its line,

means for periodically accessing the microinstructions in sequence,

means responsive to a processor request for data transfer over one of the lines for modifying the logical state of a bit in a first control instruction in the group corresponding to the one line after the latter instruction is accessed, thereby indicating the line to be active for transmitting data thereover,

means responsive to the modified instruction when it is thereafter accessed for permitting execution of succeeding control and timing instructions in the corresponding group each time they are subsequently accessed,

means thereafter effective upon execution of the timing instructions of the corresponding group a predetermined number of times determined by the initial count values for executing a succeeding data service instruction in the corresponding group to transfer data between said one line and a location in the store holding a data field of the data service instruction, and

means responsive to the processor signals for transferring data between the processor and the location in the store holding the data field of the data service instruction.

3,842,406

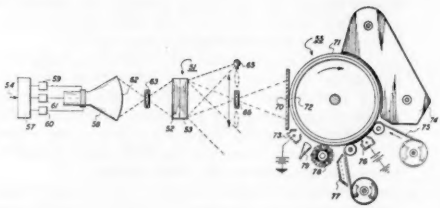
CYCLIC RECORDING SYSTEM BY THE USE OF AN ELASTOMER IN AN ELECTRIC FIELD

Nicholas K. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 101,729, Dec. 28, 1970, Pat. No. 3,716,359, which is a continuation of Ser. No. 23,649, March 30, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,379

Int. Cl. G03g *13/22*

U.S. Cl. 340—173 R 50 Claims



1. Imaging apparatus comprising

an imaging member comprising a layer of photoconductive material, an electric field deformable elastomer layer having a volume resistivity above abou 10^4 ohm-cm. adjacent said photoconductive material layer and a deformable conductive layer adjacent said elastomer layer, said deformable conductive layer comprising gold and indium, said elastomer layer being capable of deforming to correspond to an electric field pattern created by altering an electrical field across said elastomer layer by exposing the photoconductive material to electromagnetic radiation to which it is responsive;

first light means for generating input electromagnetic radiation to which said imaging member photoconductive material is responsive, for object modulating said input radiation and for exposing said imaging member to said modulated input radiation and

second light means for generating readout electromagnetic radiation and for directing said readout radiation onto said imaging member for constructing images corresponding to the deformations of the elastomer layer.

3,842,407

INDUCTIVE SENSOR FOR MAGNETIC BUBBLE DOMAIN DETECTION

Bernell E. Argyle, Putnam Valley, and Thomas H. DiStefano, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

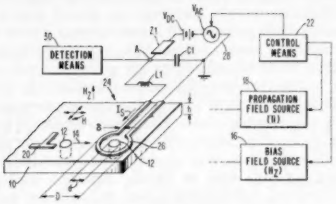
Filed June 30, 1972, Ser. No. 267,877

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF 15 Claims

1. An apparatus for detecting magnetic bubble domains in a magnetic medium, comprising:

resonant means coupled to said domains which has first and second values depending upon the amount of magnetic



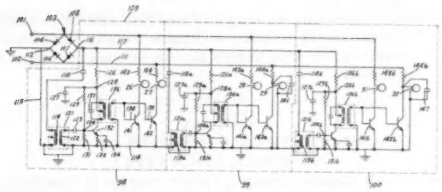
flux coupled thereto, and detection means coupled to said resonant means for detecting said first and second values.

3,842,408

REMOTE INDICATOR SYSTEM

Richard C. Wells, 8457 Sunset Rd., Minneapolis, Minn. 55432

Filed Aug. 14, 1972, Ser. No. 280,566
Int. Cl. G08b *29/00*
U.S. Cl. 340—216 **18 Claims**



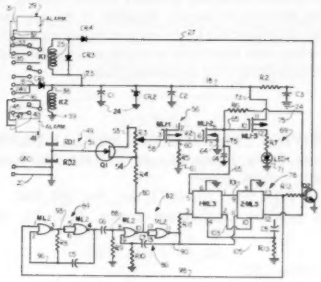
1. An apparatus for indicating the operation cycles of a washer and dryer comprising: indicator means remotely spaced from the washer and dryer for providing separate information on each operational cycle of the washer and dryer, said indicator means having first information means for each cycle of the washer and second information means indicating the "off" condition of the washer, a third information means indicating the "on" condition of the dryer and a fourth information means indicating the "off" condition of the dryer and circuit means connected to each of the first, second, third and fourth information means and to an outlet socket of an electrical distribution system, said washer having a washing timer and said dryer having a drying timer, first signal transmitter electrically connected to the washer timer to activate the first transmitter and second signal transmitter electrically connected to the dryer timer to activate the second transmitter, each of said signal transmitters having electric circuit means operable to establish a plurality of energy signals, said circuit means including feed-back oscillator circuit means and semiconductor means operable when subjected to electrical energy from the timers to provide separate energy signals having separate frequencies related to the electrical energy from each cycle of the timers, said energy signals being carried via the electrical power distribution system to the receiving circuit of the indicator, said receiving circuit being responsive to said signals to selectively energize the first, second, third and fourth information means in accordance with the frequency of the signal providing information as to the cycles of the washer and dryer.

3,842,409

IONIZATION DETECTOR APPARATUS

Ronn H. Mayer, Brewster, Kans., assignor to Unitec, Inc., Brewster, Kans.

Filed Dec. 13, 1972, Ser. No. 314,689
Int. Cl. G08b *21/00*
U.S. Cl. 340—228.1 **6 Claims**



1. A fire warning apparatus, comprising:

a. an ionization detector means,

b. a gate means connected to said ionization detector means,

c. signal level detector means connected to said gate means,

d. pulse generator means having its output connected to said gate means,

e. pulse counter means having an output and first and second input means, said first input means connected to the output of said signal level detector means and said second input means connected to said pulse generator means, said pulse counter means generating an output when a signal from said detector means has passed through said gate to said first input means, and said pulse means has applied a predetermined number of pulses to said second input means,

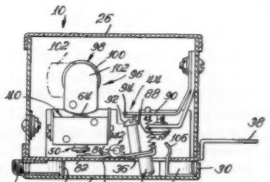
f. alarm means connected to the output of said pulse counter means and responsive to said output from said pulse counter means.

3,842,410

ALARM APPARATUS FOR CABINETS AND THE LIKE

Ardath A. Gopperton, Mount Prospect, Ill., assignor to The Paymaster Corporation, Chicago, Ill.

Filed May 14, 1973, Ser. No. 360,396
Int. Cl. G08b *13/06*
U.S. Cl. 340—274 **7 Claims**



1. An alarm apparatus comprising a mounting plate, a generally enclosed housing having a base wall with an opening therein, hinge means pivotally interconnecting one edge of said base wall with one edge of said mounting plate, said base wall when disposed substantially parallel to said mounting plate defining an alarm ready position, a primary switch as-

sembly and an alarm buzzer within said housing, a plunger assembly within said housing and including a plunger disposed to project through said base wall opening and a rocker lever pivotally mounted at its intermediate portion within said housing, said plunger extending away from one arm of said rocker lever, spring means urging said plunger outwardly of said housing and into engagement with said mounting plate when said base wall is in said alarm ready position, and said primary switch assembly including primary switch closing means for energizing said alarm buzzer disposed to be actuated by the other arm of said rocker lever upon outward movement of said plunger when said base wall is swung out of said alarm ready position away from said mounting plate.

3,842,411

DRIVING CIRCUIT FOR A DISPLAY DEVICE

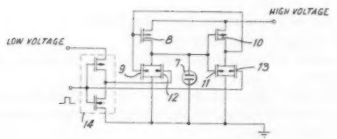
Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 23, 1971, Ser. No. 203,104

Claims priority, application Japan, Nov. 25, 1970, 45-103297

Int. Cl. G08b *5/36*

U.S. Cl. 340—332 **4 Claims**



1. A driving circuit for selectively coupling a display device to a source of high voltage in response to a relatively low voltage comprising switching circuit means formed from MOS transistors for selectively coupling said source of relatively high voltage to said display device in response to the application thereto of said relatively low voltage, said MOS transistors including two pairs of MOS transistors, the MOS transistors of each pair being connected in series along their respective source-drain paths through a connecting point, each pair of series-connected MOS transistors being further connected in series with said source of high voltage, the gate electrode of a first of the MOS transistors of each of said pairs being coupled to said relatively low voltage for switching thereby, the gate electrode of the second of the MOS transistors of each pair being connected to the connecting point of the other pair of said MOS transistors, said display device being connected to one of said connecting points in parallel with the source-drain path of the first transistor in series with said one connecting point.

3,842,412

HIGH RESOLUTION MONOLITHIC DIGITAL-TO-ANALOG CONVERTER

Walter R. Spofford, Jr., Bedford, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Nov. 22, 1972, Ser. No. 308,687

Int. Cl. H03k *13/04*

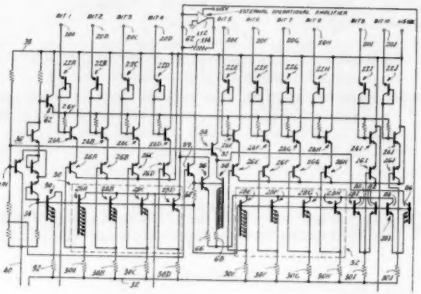
U.S. Cl. 340—347 DA **25 Claims**

1. In an IC digital-to-analog converter, wherein a plurality of individual switchable current generators are connected to a common current supply terminal to furnish weighted current contributions thereto when selectively activated by a digital input signal, each of said current generators having a control terminal to which a switch signal is supplied to activate the associated current generator;

the improvement for providing a current generator which develops a very small current without requiring the use of an excessively large resistor, comprising:

first and second transistors;

means connecting the bases of said transistors together;



means connecting the emitters of said transistors together;

a resistor connected between said emitters and a supply voltage line to produce a flow of current through both of said transistors and said resistor when the two transistors are switched on;

switch means responsive to one bit of a digital input signal and including means to activate both of said transistors together; and

means connecting the output of said first transistor to said current supply terminal to furnish thereto a fractional portion of the total current flowing through both of said transistors.

3,842,413

ANALOG-DIGITAL CONVERTER OF THE RE-CIRCULATION TYPE

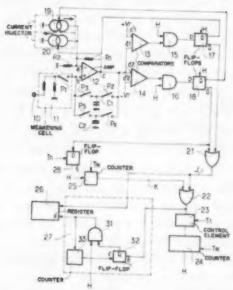
Jean-Louis Lagarde, Arpajon, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Nov. 17, 1972, Ser. No. 307,369

Claims priority, application France, Nov. 17, 1971, 71.41171

Int. Cl. H03k *13/00*

U.S. Cl. 340—347 AD **13 Claims**



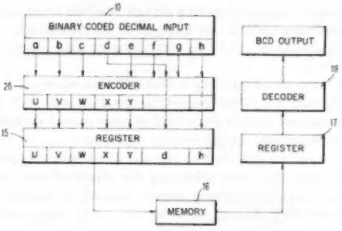
1. An analog-to-digital convertor of the re-circulating type for compression law coding having a coding characteristic formed by n sections whose successive slopes decrease according to binary law, comprising clock means for supplying clock pulses, at least one amplifier having a gain of 2 for amplifying a level to be coded applied to an input of the amplifier, first threshold comparator means connected to said

amplifier for comparing amplified positive levels to be coded with a predetermined threshold and providing an output indicative thereof, second threshold comparator means connected to said amplifier for comparing amplified negative levels to be coded with a predetermined threshold and providing an output indicative thereof, said first and second threshold comparator means having an operating rhythm controlled by the clock pulses, counter means for counting clock pulses starting with an original pulse, shift register means, and logic switching means for controlling the application of clock pulses to said counter means and to said shift register means, said logic switching means being responsive to an output of said first or second threshold comparator means indicating that a threshold has been exceeded for a first time for blocking the counting of pulses by said counter means and for enabling the application of clock pulses to said shift register means, wherein the complete coding is formed by a first series of bits supplied by said counter means indicating the order of the section of the coding characteristic and a second series of bits supplied by said shift register means indicating the position of the level of the section.

3,842,414
BINARY CODED DECIMAL CONVERSION APPARATUS

Tien Chi Chen, San Jose, Calif., and Irving Tze Ho, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1973, Ser. No. 371,004
Int. Cl. H03k *13/24;* **H04l** *3/00*
U.S. Cl. 340—347 DD **14 Claims**

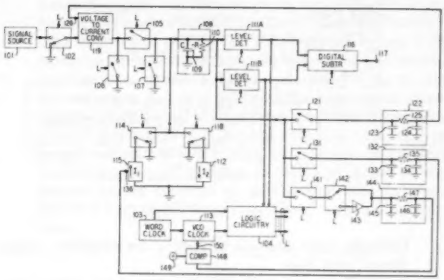


1. Apparatus for encoding multidigit binary-coded-decimal numbers, each of a predetermined first quantity of bits, into encoded numbers each having a second quantity of bits less than said predetermined quantity, said apparatus comprising: means for selecting a set from a class of sets of bit symbols with each set corresponding to a respective combination of the bits in the most significant position of each of the four-bit groups representing the respective digits of the binary-coded-decimal number to be encoded; said selected set being the set corresponding to said respective combination and determining certain of the bits of the multi-digit binary-coded-decimal number to be encoded and leaving undetermined the other bits of said multi-digit binary-coded-decimal number to be encoded; register means having a plurality of bit positions equal to said second quantity, means for transmitting said bit symbols of said selected set to respective predetermined positions in said register means, and means for transmitting said undetermined other bits of said multi-digit binary-coded-decimal number to other respective predetermined positions in said register means, whereby said register means will store an encoded number representing and having fewer bits than said multi-digit binary-coded-decimal number.

3,842,415
ANALOG-TO-DIGITAL CONVERTER WITH ADAPTIVE FEEDBACK

Paul Wray Osborne, Neptune, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 8, 1973, Ser. No. 413,918
Int. Cl. H03k *13/16*
U.S. Cl. 340—347 AD **10 Claims**



1. An encoder for encoding analog samples into digital representations comprising an encoder input terminal for receiving each of said input analog samples, a multiplier connected to said input terminal to multiply each successive sample at the input of said multiplier by a predetermined factor betweeen predetermined time intervals, at least one level detector connected to said multiplier to compare the output of said multiplier with a predetermined threshold at the end of each of said time intervals, said at least one level detector producing a first digit at the end of each of said time intervals when the output of said multiplier is less than said threshold, and a second digit at the end of each of said time intervals when the output of said multiplier is greater than said threshold, network means connected to said multiplier and said at least one level detector to change the output of said multiplier by a constant value at the end of each of said time intervals when the output of said at least one level detector is said second digit, and means connecting an encoder output terminal to said at least one level detector to receive the digital word formed by the successive digits produced by said at least one level detector, said multiplier comprising the combination of a parallel interconnected capacitor and negative resistor means to produce exponential signals in response to each of said input samples, the product of the values of said capacitor and negative resistor means being such that the absolute magnitude of each of said exponential signals increases by said predetermined factor between said predetermined time intervals.

3,842,416
INTEGRATING ANALOG-TO-DIGITAL CONVERTER

Tetsutaro Eto, 16-14, Kamisoshigaya-3, Tokyo, Japan

Filed May 9, 1972, Ser. No. 251,678
Claims priority, application Japan, May 11, 1971, 46-31371
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **6 Claims**

1. An analog to digital converter comprising in combination:

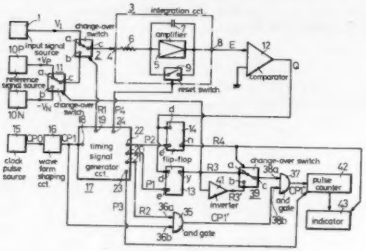
a. an integrating amplifier means,

b. a source of clock pulses,

c. a timing signal generator that produces timing pulses that define for each conversion cycle a series of time intervals the first and second of which are selected portions of a conversion cycle and each of the remainder of which is half the preceding interval,

d. means for applying a signal of unknown amplitude and polarity to said integrating amplifier only during the first timing interval of each conversion cycle to obtain an amplifier output representative of the unknown signal,

e. means for applying signals of known amplitude and polarity to said amplifier during the second and each of the



following time intervals to reduce the amplifier output toward zero, and

f. means for counting the clock pulses during those time intervals following the second interval and during only those time intervals in which the polarity of the amplifier output at the start of the interval is the same as the polarity of the amplifier output at the end of said first time interval.

3,842,417

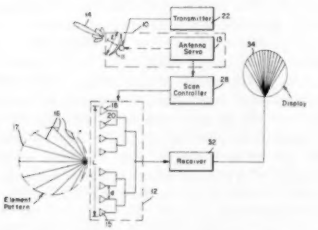
BISTATIC RADAR SYSTEM

Frederick C. Williams, Topanga, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 14, 1972, Ser. No. 225,804

Int. Cl. G01s *9/02*; **H01g** *3/26*

U.S. Cl. 343—5 R **7 Claims**



1. A bistatic radar system comprising:

a transmit antenna having a single main lobe;

an extended receive antenna having a plurality of receive antenna elements so as to form a thinned array with spacing between said antenna elements such that the grating lobes thus derived appear substantially at the nulls of said transmit antenna pattern;

a plurality of radar receiver mixers each responsive to signals received by one of said plurality of antenna elements;

a plurality of phase shifters each supplying a phase shifted local oscillator signal to each of said radar receiver mixers;

a plurality of intermediate frequency preamplifiers each responsive to signals from said plurality of radar receiver mixers;

a corporate feed supplying said local oscillator signal to each of said phase shifters; and

means coupled between said transmit and receive antenna for synchronizing the pointing directions thereof.

3,842,418

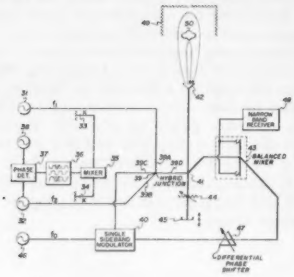
RADAR CROSS-SECTION MEASUREMENT APPARATUS

Herbert W. Lorber, 14755 Penasquitos Ct., San Diego, Calif. 92129

Filed Feb. 8, 1973, Ser. No. 330,578

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 SA **4 Claims**



1. Apparatus for measuring the radar cross-section of a target at a predetermined range comprising:

a first unmodulated continuous wave signal generating means at a first frequency;

a second unmodulated continuous wave signal generating means at a second frequency separated from said first frequency by a predetermined amount;

a mixing means having first and second inputs, said first frequency generating means coupled to said first input and said second frequency generating means coupled to said second input;

a first output from said mixing means coupled to an antenna in operable proximity to a target to be measured;

receiving means in operable proximity to said target to be measured;

a comparison means having a first and second input and an output, said receiving means coupled to said first input and a second output from said mixing means coupled to said comparison means second input; and

a readout means coupled to an output of said comparison means whereby upon adjusting the phase of said second output from said mixing means undesired signals from said receiving means are reduced at the output of said comparison means.

3,842,419

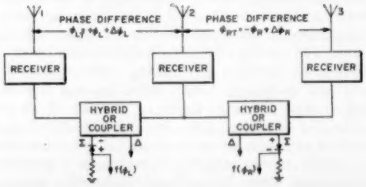
PASSIVE RANGING INTERFEROMETER SYSTEM

Walter R. Arndt, Wantagh, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 280,008

Int. Cl. G01s *5/14*

U.S. Cl. 343—112 D **11 Claims**



1. A passive ranging interferometer comprising:

an antenna array having elements in spaced relationship to each other;

said elements producing phase related signals in response to a wave received by said array from an emitter;

said phase related signals comprising equal and opposite phase components and a phase differential component;

means connected to said antenna to produce an analogue voltage proportional to said phase differential component and representative of the distance of an emitter from said antenna array, said means connected to said antenna including means for adding and cancelling said equal and opposite phase components; and

said analogue voltage being independent of said equal and opposite phase components;

said analogue voltage being constant for a constant emitter range from aid antenna array and independent of the angle of said emitter with respect to the boresight of said array.

3,842,420

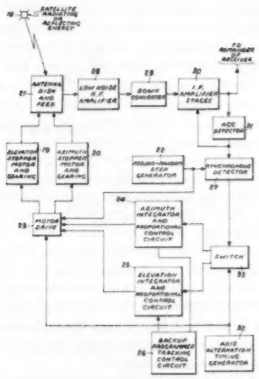
STEP TRACKING SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 13, 1972, Ser. No. 297,535

Int. Cl. G01s *3/44*

U.S. Cl. 343—117 R **10 Claims**



1. A step racking system to track a source of energy comprising:

an antenna;

first means coupled to said antenna capable of mechanically moving said antenna independently in azimuth and in elevation;

second means to generate a single pseudo-random step waveform;

third means coupled to said antenna to detect the amplitude of said energy received by said antenna;

fourth means coupled to said second means and said third means responsive to said pseudo-random step waveform and said amplitude and said received energy to produce a single tracking error control signal;

fifth means capable of being coupled to said first means and said fourth means and capable of responding to said tracking error control signal to produce a first tracking drive signal which is capable of driving said first means to reduce tracking error in azimuth;

sixth means capable of being coupled to said first means and said fourth means and capable of responding to said tracking error control signal to produce a second tracking drive signal which is capable of driving said first means to reduce tracking error in elevation; and

seventh means operative during first given spaced time intervals to couple said fourth means to said fifth means to enable said fifth means to produce said first tracking drive signal, to couple said second means to said first means to step scan said antenna in azimuth in response to said pseudo-random step waveform during first spaced portions of said first time intervals, and to couple said fifth means to said first means to couple said first tracking drive signal to said first means during second spaced portions of said first time intervals different than said first portions of said first time intervals and operative during second given spaced time intervals different than said first time intervals to couple said fourth means to said sixth means to enable said sixth means to produce said second tracking drive signal, to couple said second means to said first means to step scan said antenna in elevation in response to said pseudo-random step waveform during first spaced portions of said second time intervals, and to couple said sixth means to said first means to couple said second tracking drive signal to said first means during second spaced portions of said second time intervals different than said first portions of said second time intervals.

3,842,421

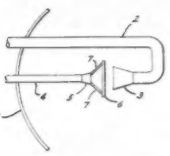
MULTIPLE BAND FREQUENCY SELECTIVE REFLECTORS

James V. Rootsey, and Edward S. Jewell, both of Sunnyvale, Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Feb. 15, 1973, Ser. No. 332,666

Int. Cl. H01q *19/14*

U.S. Cl. 343—909 **10 Claims**



1. In a resonant electromagnetic energy reflector structure having a plurality of polarization insensitive resonant elements, said elements being in a common plane and in sufficient number to render said plane electrically active at the frequency of resonance of said elements, the improvement comprising:

interspersing spaced polarization insensitive resonant elements of a plurality of resonant frequencies, said elements being configured and spatially rotated to minimize the electrical coupling between elements of different resonant frequencies.

3,842,422

METHOD AND APPARATUS FOR RECORDING SIGNALS

Jan A. VandenBroek, Ann Arbor, and William L. Wilfong, Whitmore Lake, both of Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.

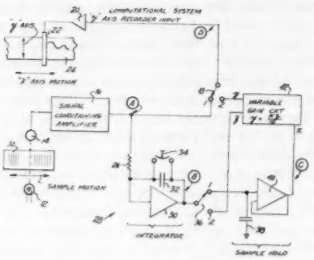
Filed Oct. 12, 1973, Ser. No. 405,918

Int. Cl. G01d *9/38*

U.S. Cl. 346—1 **12 Claims**

1. The method of graphically recording a time varying signal comprising: providing said signal to a graphic output device and generating a trace of said time varying signal on said device; providing said time varying signal to an integrator to generate a value proportional to the time integral of said time varying signal; adjusting the gain of a variable gain circuit as

a function of the output of said integrator; providing said time varying signal to the integrator and providing the output of the



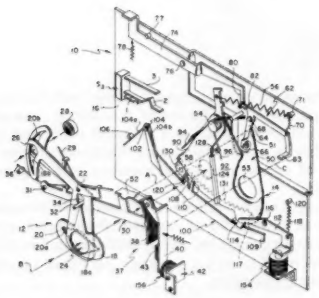
integrator to the variable gain circuit; and recording the output of the variable gain circuit in positional relationship with the trace of said time varying signal.

3,842,423

EXPOSURE CONTROL APPARATUS

Loren J. Craig, Springwater, and William T. Hochreiter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,375
Int. Cl. G03b 7/14, 7/20
U.S. Cl. 354—29 **6 Claims**



1. In a camera of the type having adjustable diaphragm and shutter means, lens means which is selectively adjustable to one of a plurality of focal lengths and light responsive means for automatically controlling said diaphragm and shutter means to effect a photographic exposure according to a predetermined program, the improvement comprising:

adjustable program control means, operatively associated with said diaphragm and shutter means, for varying said predetermined program of photographic exposure; and

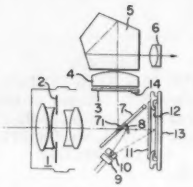
means, operatively associated with said lens means and said program control means, for adjusting said program control means in response to adjustment of said lens means so as to provide a more optimum relationship between shutter speed and depth of field for a focal length selected for said lens means.

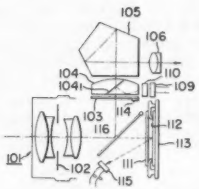
3,842,424

EXPOSURE CONTROL DEVICE IN SINGLE-LENS REFLEX CAMERA

Tokuichi Tsunekawa, Yokohama; Soichi Nakamoto, and Goro Hasegawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 350,195
Claims priority, application Japan, Apr. 20, 1972, 47-39753
Int. Cl. G03b 7/08
U.S. Cl. 354—31 **14 Claims**





1. An exposure control device in a singlelens reflex camera for metering light which has passed through the picture-taking lens of the camera to automatically effect a shutter speed control, said device comprising:

light receiving means disposed so as to receive, before release of the shutter, at least part of the light which has passed through the picture-taking lens and also to receive, after the release of the shutter, light reflected by a film surface, said means having a relatively slow response characteristic to permit high speed shutter control by utilizing said characteristic of said means, while also enabling low speed shutter control by the light reflected by the film surface;

optical means for directing at least part of the light which has passed through said picture-taking lens to said light receiving means, said optical means being movable out of the picture-taking optical path to interrupt, during picture-taking, the direction by said optical means to said light receiving means of said light which has passed through said picture-taking lens;

control means connected to said light receiving means to control the opening and closing of the shutter of the camera, said control means including:

a time limit circuit electrically connected with said light receiving means;

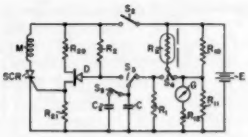
a switching circuit connected with said time limit circuit; and

actuator means for closing the shutter connected with said switching circuit and adapted to actuate the shutter to close in response to reversal of said switching circuit.

3,842,425
APPARATUS ENLARGING THE RANGE OF EXPOSURE TIME CONTROL

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Haisha Lattari Tokerten, Tokyo, Japan

Continuation of Ser. No. 168,216, Aug. 2, 1971, abandoned. This application June 4, 1973, Ser. No. 366,277
Claims priority, application Japan, July 31, 1970, 45-66507
Int. Cl. G01j 1/46
U.S. Cl. 354—51 6 Claims

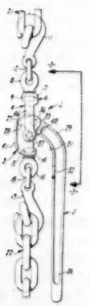


1. For use in a camera having a shutter, a built-in automatic exposure time control apparatus for controlling the exposure time of a shutter in a camera comprising, detector means having means detecting when in use the brightness of a subject being photographed and brightness-level determining means for determining whether the brightness of said subject is above a given level or below said given level, said detector means comprising a detecting circuit including a photoconductive element for sensing said brightness and said brightness-level determining means comrpising a comparator comparing a given voltage and a variable voltage under control of said photoconductive element varying in dependence upon said brightness, signal-developing means coactive with said detector means developing an output signal for closing said shutter after opening thereof to determine exposure time comprising first means for determining the exposure time as a function of said brightness of said subject and second means connectable to said first means including capacitor means, said brightness-level determining means further including means for connecting said second means to said first means when said brightness is below said given level to augment said first means and to jointly therewith vary said output signal, and means receptive of said output signal for use as a command to close said shutter.

3,842,426
LATCHING OVER-CENTER TYPE LOAD BINDER

Ralph A. Ratcliff, and Bruce E. Ratcliff, both of P.O. Box 543, Belmont, Calif. 94002

Filed Feb. 5, 1973, Ser. No. 329,906
Int. Cl. B66f 3/00
U.S. Cl. 254—78 13 Claims

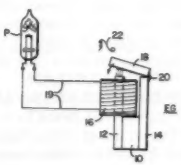


1. An over-center type latching load binder comprising
A. an operating lever having an offset portion at one end thereof and a manually graspable handle portion at the other end thereof,
B. a first clevis member pivotally connected with said lever adjacent said one end thereof, including
1. structure thereon for operatively connecting said binder to a first load hold down element,
C. a second clevis member operably connected with said lever and movable between predetermined positions along said offset portion, whereby variable mechanical advantage features are imparted to said binder as the same is moved between an open or load unbinding position and a closed or load binding position, said second clevis member including
1. structure therein for operatively connecting said binder to a second load hold-down element;
D. said lever having a curved bearing surface in said offset portion thereof over which said second clevis member rides during load binding and unbinding,
E. a pin operatively connecting said second clevis member with said lever which is ridable over said bearing surface thereon as said lever moves between said load unbinding and binding positions,
F. latching structure on said first clevis member with which said pin is engageable as said lever is moved into the dead-center position during load binding, and
G. means on said lever engageable with said pin to positively urge the same from engagement with said latching structure when said lever is moved from said load binding position toward said load unbinding position,
1. said means comprising a tongue at the end of said lever which is opposite said handle portion,
2. said tongue normally being spaced from said pin when said pin is engaged with said latching structure so that said lever may be moved a substantial distance from said load binding position toward said load unbinding position before said tongue engages said pin to positively urge said pin out of engagement with said latching structure.

3,842,427
PHOTOGRAPHIC CAMERA HAVING AN INTEGRAL MECHANICALLY POWERED ELECTRIC GENERATOR

William E. Shoupp, 343 Maple Ave., Pittsburgh, Pa. 15218, and Walter V. Bratkowski, 3314 Idaho Ave., McKeesport, Pa. 15132

Filed July 17, 1973, Ser. No. 380,180
Int. Cl. G03b 15/03
U.S. Cl. 354—135 15 Claims



1. In combination with a photographic camera having a shutter that is controlled by a shutter-actuating mechanism, means for energizing and operating an electrical device associated with said camera comprising;
an electric generator comprising a stationary permanent magnet having a pair of spaced pole pieces that extend from said permanent magnet and together therewith define a single magnetic circuit, means movable to and from bridging relationship with said pole pieces and operative when so moved to change the reluctance of said magnetic circuit, a wire coil in inductive relationship with said magnetic circuit and oriented to generate a voltage pulse in response to changes in the reluctance of the

magnetic circuit produced by the movement of said bridging means,

a spring coupled to said bridging means and arranged, when tensioned and then controllably released, to rapidly shift the position of said bridging means relative to the pole pieces and cause said wire coil to generate a voltage pulse,

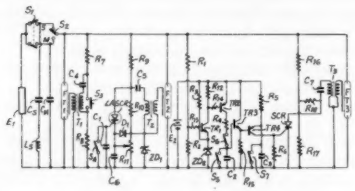
latch means operative to hold said bridging means in spring-loaded position and, in response to the operation of said shutter-actuating mechanism, subsequently release it, and electric circuit means connected to said wire coil for delivering the generated voltage pulse to an electrical device that is associated with the camera.

3,842,428

CAMERA FLASH CONTROLS WITH INTERNAL LIGHT DETECTION

Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 5, 1973, Ser. No. 337,872
Claims priority, application Japan, Mar. 8, 1972, 47-23163
Int. Cl. H05b *41/00*
U.S. Cl. 354—145 **9 Claims**



1. In a camera, flash means for providing first preparatory flash illumination prior to film exposure and then main flash illumination during film exposure, preparatory control means operatively connected with said flash means for controlling the duration of preparatory flash illumination, timing circuit means including memory means operatively connected with said preparatory control means for detecting and storing an electrical quantity representing the time duration of the preparatory flash illumination, and main control means operatively connected with said flash means and with said timing circuit means for determining the duration of main flash illumination at least in part in accordance with said electrical quantity.

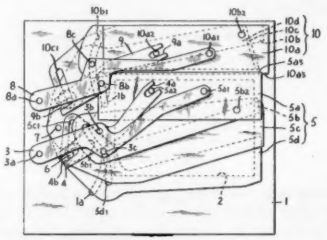
3,842,429

FOCAL PLANE SHUTTER BLADE ARRANGEMENT AND SUPPORT

Kiyoshi Kitai, Tokyo; Eiichi Onda, Saitama; Mitsuo Koyama, Chiba; Shinji Nagaoka, Chiba, and Tadashi Nakagawa, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,875
Claims priority, application Japan, May 15, 1972, 47-47830
Int. Cl. G03b *9/10*
U.S. Cl. 354—250 **5 Claims**

1. For use in a focal plane shutter, a shutter blade arrangement and support comprising; means defining an exposure aperture; a first group of shutter-opening shutter blades operable from an operative position closing the exposure aperture when the shutter is cocked to an operative position opening the exposure aperture for the taking of a photograph; a second group of shutter-closing shutter blades operable from an operative position spaced from the exposure aperture to an operative position jointly closing the exposure aperture subsequent to the opening of said exposure aperture; each group of shutter blades comprising a slit-forming shutter blade having a straight edge and actuated with said straight edge substantially normal to a plane transversely to the exposure aperture and transverse to the direction of movement of the slit-forming shutter blade and a plurality of other shutter blades; means mounting said first group of shutter blades; and means mounting said second group of shutter blades, each mounting means comprising a pair of actuating levers comprising a selectively driven operating main lever and an auxiliary lever, pivotal



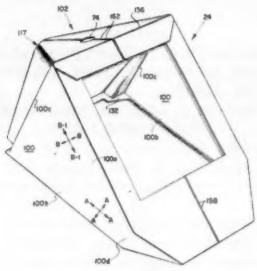
means pivotally connecting one end portion of the main and auxiliary levers to the slit-forming shutter blade on axes disposed in a line parallel to said straight edge, means pivotally connecting the auxiliary lever to the main lever intermediate the ends of both, means pivotally mounting the other end portions of both levers for pivotal movement about axes disposed in a line parallel to said straight edge and means mounting the remaining shutter blades in the group for sequential movement in response to the movement of said main lever.

3,842,430

FOLDING CAMERA WITH LOW COST BELLOWS

William Hudspeth, Norwell, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1973, Ser. No. 429,092
Int. Cl. G03b *17/04*, *19/20*
U.S. Cl. 354—187 **22 Claims**



1. A folding camera comprising:

a housing including at least first and second housing sections mounted for relative movement between a compact folded position and an extended position wherein said first and second housing sections define a space therebetween;

optical means for transmitting image-bearing light along an optical path in said space, when said first and second housing sections are located in said extended position;

a collapsible and erectable bellows formed of a flexible, light-opaque material of the type having oriented stretch characteristics whereby said material has minimum stretch along a first set of orthogonal axes and maximum

stretch along a second set of orthogonal axes disposed at a predetermined angle of rotation with respect to said first set of axes;

said bellows being coupled to said first and second housing sections for movement therewith between a compact collapsed position when said first and second housing sections are in said folded position and an erected position, when said first and second housing sections are in said extended position, wherein said erected bellows defines symmetrical opposing light-blocking walls in said space symmetrically disposed with respect to a plane of symmetry of said optical path for excluding extraneous light from said optical path;

said bellows and said first and second housing sections being operatively associated such that said first and second housing sections apply tension forces to said erected bellows and said bellows being configured such that said flexible material has one of its axes of maximum stretch oriented in the general direction of said tension forces; and

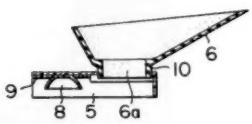
means for directing said tension forces along a pair of predetermined lines on each of said opposing bellows walls such that said lines are substantially parallel with said one axis of maximum stretch to define a pair of fold lines in each opposing wall along which said opposing walls fold to assume said collapsed position of said bellows as said first and second housing sections move towards said folded position.

3,842,431

EYECAP FOR A COMPACT CAMERA

Kotaro Sakuma, No. 48-12, Higashu-Ogu 6-chome, Tokyo, Japan

Filed Oct. 4, 1973, Ser. No. 403,609
Claims priority, application Japan, May 1, 1973, 48-52116
Int. Cl. G03b *11/04*
U.S. Cl. 354—287 **2 Claims**



1. For a compact camera having a generally rectangular back with a viewer sight therein, an eyecap comprising:

a frame having a back and three peripheral sidewalls which extend forwardly at the top, bottom and one end thereof; means defining an opening through the frame, positioned to overlie the camera viewer when the frame back is in place against the camera back with the three frame sidewalls respectively engaging the top, bottom and one end of the camera;

resilient plate means secured to and lining the first two of said sidewalls of the frame and the forward side of the back of the plate from adjacent said opening to adjacent the opposite end of said frame, said resilient plate means including adhesive means for securing the eyecap to the camera; and

a cap member of resilient material, including a base portion, having means defining an opening therethrough, and a flaring tubular eyecap portion;

means securing the base of the cap member to the frame with said openings through each in axial alignment so that the eyecap portion flares rearwardly from around the opening through the base, whereby a photographer may press his face, peripherally of his eye, against the rear of the eyecap portion to permit him to view through the finder without interference from stray light rays which could otherwise enter his vision from between his eye and the finder;

said eyecap portion being resiliently foldable from a rearwardly flaring condition of use, to an at least partially inside out condition to cause the camera including the eyecap to become more compact for carrying and storage.

ERRATA

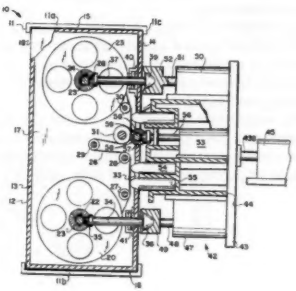
For Classes 358—75 and 358—12 see:
Patents Nos. 3,842,195 and 3,842,196

3,842,432

MAGNETIC TAPE TRANSDUCING SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 295,807, Oct. 10, 1972, which is a continuation of Ser. No. 224,131, Feb. 7, 1972, Pat. No. 3,699,266, which is a continuation-in-part of Ser. No. 142,748, Aug. 28, 1961, Pat. No. 3,646,258, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Mar. 11, 1974, Ser. No. 449,602
Int. Cl. G11b *5/54, 19/20*
U.S. Cl. 360—105 **4 Claims**



1. A record tape transducing apparatus comprising in combination:

a magazine containing record tape and including supply take-up means for a length of elongated record tape,

said magazine having side walls and end walls surrounding said tape,

an opening in an end wall of said magazine,

means for guiding a portion of said tape in a fixed path past said end wall opening,

a first cylindrical member rotatably supported behind said portion of said tape which is guided in said fixed path,

a second cylindrical member,

a scanning transducer,

a common support for supporting said second cylindrical member and said scanning transducer,

a base having means for removably supporting said magazine at a location therein whereby said second cylindrical member and said scanning transducer are in direct alignment with said end wall opening in said magazine,

means for guiding said common support in movement towards and away from said magazine along a path wherein said scanning transducer may be operably positioned with respect to said portion of said tape disposed at said end wall opening from a distance away from said magazine wherein said transducer is out of operative relation with said tape of said magazine,

means for driving said common support from a first location wherein said second cylindrical member is out of operable contact with said tape and is disposed away from said magazine to a second location wherein said second cylindrical member is engaged against said tape and forces said tape against said first cylindrical member, and wherein said scanning transducer moves with said common support towards said magazine and become operatively disposed for scanning said portion of said tape aligned with said opening in said end wall of said magazine, and

means for power rotating one of said first and second cylindrical members when said first and second cylindrical members are engaging said tape therebetween to drive said tape between said supply and said take-up means.

3,842,433

MAGNETIC TAPE DRIVE AND TRANSDUCING METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 295,807, Oct. 10, 1972, which is a continuation of Ser. No. 224,131, Feb. 7, 1972, Pat. No. 3,699,266, which is a continuation-in-part of Ser. No. 142,748, Aug. 28, 1961, Pat. No. 3,646,258, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Mar. 11, 1974, Ser. No. 449,601

Int. Cl. G11b *5/54, 19/20*

U.S. Cl. 360—105 **8 Claims**

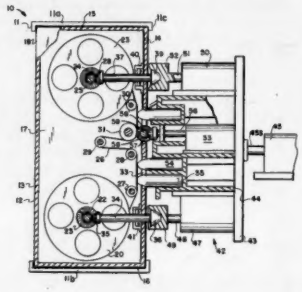
1. A method of transducing information relative to a magnetic tape comprising:

guiding a length of elongated magnetic tape in a fixed path, which path is located closely adjacent to a first rotatable cylindrical member disposed on one side of said tape at a location whereby said cylindrical member is capable of engaging said tape,

movably supporting a common mount for a transducer adjacent said fixed path, which transducer is operable for magnetically transducing signals relative to said tape when in engagement with said tape, and

rotatably supporting a second cylindrical member on said common support towards said magazine and become operatively disposed for scanning said portion of said tape

first disposing said common mount for said transducer and said second cylindrical member at a first location to provide said transducer away from but in direct alignment with a free length of said tape disposed along said fixed



path with said second cylindrical member located by said common mount in direct alignment with said first cylindrical member and just off said tape,

moving said common mount for said transducer and said second cylindrical member a predetermined distance towards said tape to cause said transducer to engage and become operatively coupled to said tape and to simultaneously cause said second cylindrical member to engage and pinch said tape against said first cylindrical member, and

power rotating one of said first and second cylindrical members while said tape is pinched therebetween and the other cylindrical member to drive said tape past said transducer so as to permit transducing operations to be performed relative to said tape.

DESIGNS

OCTOBER 15, 1974

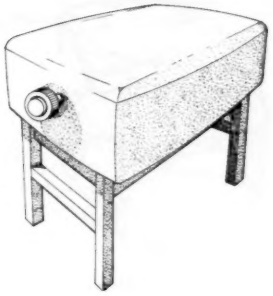
233,186
SHIRT
Jerry J. Calhoun, Sr., 393 Lewis Blvd. SE., St. Petersburg, Fla. 33705
Filed May 23, 1972, Ser. No. 256,204
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208

233,187
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries, Inc., Boulder, Colo.
Filed Nov. 29, 1972, Ser. No. 310,349
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

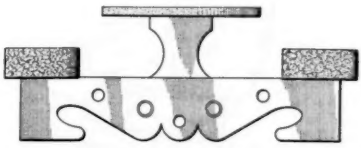
233,188
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries, Inc., Boulder, Colo.
Filed Apr. 19, 1973, Ser. No. 352,698
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

233,189
CUFF LINK RETAINER
Eugene A. Lakos, 201 E. 66th St., New York, N.Y. 10021
Filed May 18, 1972, Ser. No. 254,823
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—405

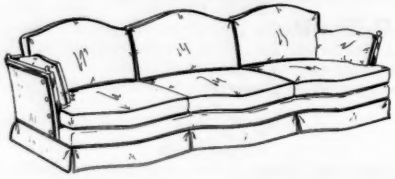
233,190
ORGAN BENCH
Hubert S. Shearin and Charles Riley, Cincinnati, Ohio, assignors to Manual Arts Furniture Company, Cincinnati, Ohio
Filed Feb. 28, 1973, Ser. No. 336,513
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32



233,191
COMBINED GAME TABLE AND SEATING UNIT
Caine Turner, 938 W. 46th St. 90037, and Connie Marie Turner, 1926 W. 66th St. 90047, both of Los Angeles, Calif.
Filed May 7, 1973, Ser. No. 357,550
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—45



233,192
SOFA
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Apr. 16, 1973, Ser. No. 351,476
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



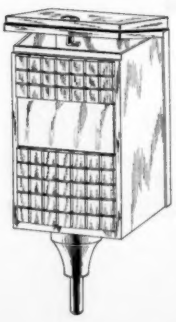
233,193
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Apr. 16, 1973, Ser. No. 351,477
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69

233,194
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Apr. 16, 1973, Ser. No. 351,475
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

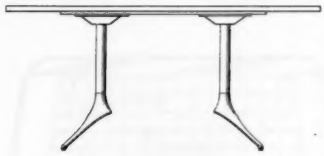
233,195
SHIRT DISPLAY RACK
Romie L. Le Fever, Irving, Tex., assignor to Self Serv Fixture Co., Inc., Dallas, Tex.
Filed July 10, 1972, Ser. No. 270,557
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85

233,196
TOILET BOWL BRUSH HOLDER
James C. Fry, Wooster, Ohio, assignor to Rubbermaid Sales Corp., Wooster, Ohio
Filed Aug. 9, 1972, Ser. No. 278,934
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D6—85

233,197
SOAP DISPENSER
James R. Findlay, 4861 Arvilla Drive S. 43623, and James C. Lower, 4729 Corey Road 43623, both of Toledo, Ohio
Filed July 24, 1972, Ser. No. 274,759
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95

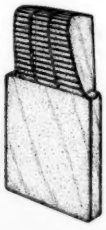


233,198
TABLE
Warren D. Petersen, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Aug. 3, 1972, Ser. No. 277,621
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



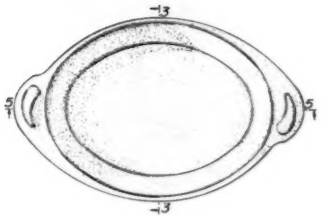
233,199
FLOWER RACK
John E. Monet, 7416 Deep Run Lane, Birmingham, Mich. 48024, and Frederick P. Brunette, Farmington, Mich.; said Brunette assignor to said Monet
Filed Oct. 25, 1972, Ser. No. 300,678
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—183

233,200
MASSAGE CUSHION
Alfred W. Madl, Glendale, Wis., assignor to Oster Corporation, Milwaukee, Wis.
Filed Oct. 5, 1972, Ser. No. 295,371
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

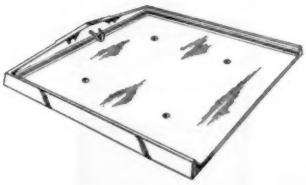


233,201
SERVING TRAY FOR PIZZA
Brian C. Egan, 230 E. Ontario, Chicago, Ill. 60611
Filed Sept. 20, 1972, Ser. No. 290,443
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—21

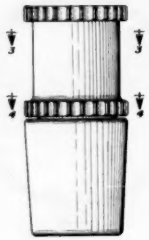
233,202
PLATTER
John A. Chernak, Bedford Heights, Ohio, assignor to Tomlinson Industries, Inc., Cleveland, Ohio
Filed Apr. 9, 1973, Ser. No. 349,416
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—21



233,203
FISH CLEANING BOARD
Ernest Wade Hughes, Rte. 1, Box 290A, Breckenridge, Tex. 76024
Filed Mar. 1, 1973, Ser. No. 336,947
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46

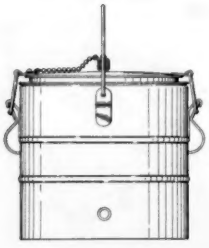


233,204
FOOD GRATER
Kenneth F. Fisher, Roseland, N.J., assignor to Acme Metal Goods Manufacturing Company
Filed Jan. 31, 1973, Ser. No. 328,308
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

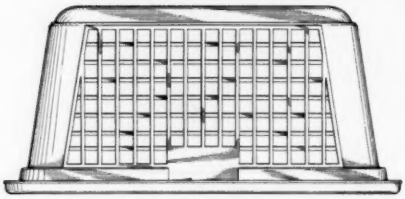


233,205
JIGGER
Lawrence R. Wagner, 5539 E. 47th St. 73129, and Anita A. Hendricks, 6932 E. 15th Place, Apt. 119 73129, both of Tulsa, Okla.
Filed Jan. 11, 1973, Ser. No. 322,766
Term of patent 14 years
Int. Cl. D7—*01;* D10—*04*
U.S. Cl. D7—50

233,206
INSULATED JUG OR SIMILAR ARTICLE
Thomas W. Kaufman, 420 W. Main St., Carrollton, Ohio 44615
Filed Oct. 18, 1972, Ser. No. 298,620
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—61

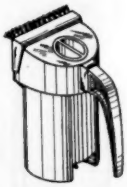


233,207
LAUNDRY BASKET
Charles F. Molzen, Wooster, Ohio, assignor to Rubbermaid Sales Corp., Wooster, Ohio
Filed Aug. 9, 1972, Ser. No. 278,933
Term of patent 7 years
Int. Cl. D7—*05*
U.S. Cl. D7—163



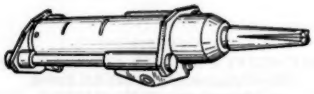
233,208
FOLDING ADJUSTABLE GRILL
Saul Epstein, 5015 Varna Ave., Sherman Oaks, Calif. 90067
Filed Dec. 26, 1972, Ser. No. 318,215
Term of patent 7 years
Int. Cl. D7—*02*
U.S. Cl. D7—107

233,209
STEAMING AND BRUSHING APPLIANCE FOR UNCREASING TEXTILES
Marc Terraillon, Gaillard, France, assignor to Terson S.a.r.l., Annemasse, France
Claims priority, application Switzerland Nov. 24, 1972
Filed May 24, 1973, Ser. No. 363,721
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—164



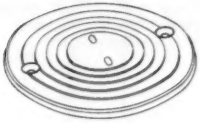
233,210
REFUSE COMPACTOR CABINET
Charles S. Bassin, Longmeadow, Mass., assignor to The Compactor Corporation, Chicopee, Mass.
Filed Sept. 11, 1972, Ser. No. 287,910
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

233,211
PNEUMATIC CRUSHING MACHINE
Alexandr Alexandrovich Vikhlyaev, ulitsa Parkovaya 16-a; Georgy Mikhailovich Nosikov, ulitsa Gogolya 17, kv. 48; Nikolai Ivanovich Semenov, ulitsa Vetluzhskaya 14, kv. 7; and Alexandr Inokentievich Fedulov, ulitsa Michurina 17, kv. 5, all of Novosibirsk, U.S.S.R.
Filed Mar. 30, 1972, Ser. No. 239,865
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—67



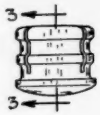
233,212
HAND SAW CONSTRUCTION
Raymond C. Dreier, Chicago, Ill., assignor to Dreier Brothers, Inc., Chicago, Ill.
Filed Apr. 26, 1973, Ser. No. 354,513
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—96

233,213
VACUUM INLET
James F. Anderson, Grand Rapids, Mich., assignor to Ander-Mel, Incorporated, Wyoming, Mich.
Filed Mar. 9, 1973, Ser. No. 339,706
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—187



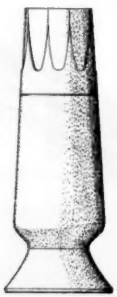
233,214
FLOW CONTROL CLAMP
Edward T. Sanelli, Buffalo Grove, Ill., assignor to Redmer Plastics, Inc., Franklin Park, Ill.
Term of patent 14 years
Filed Sept. 5, 1972, Ser. No. 286,180
Int. Cl. D8—*08;* D24—*99*
U.S. Cl. D8—229

233,215
SPRING FASTENER OR SIMILAR ARTICLE
Sigurd Walter Bengtsson, Bruksgatan 17, Goteborg, Sweden
Filed Nov. 17, 1972, Ser. No. 307,655
Claims priority, application Sweden May 18, 1972
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—264

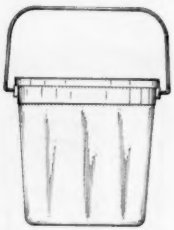


233,216
BOTTLE
Nicolas Medina Cachero, Cadiz, Spain, assignor to Criadores, Almacenistas y Distribudores de Jeres, S.A., Cadiz, Spain
Filed July 6, 1972, Ser. No. 269,393
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—111

233,217
COMBINED BOTTLE AND CAP THEREFOR
Dutro Blocksom, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 11, 1972, Ser. No. 287,741
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147

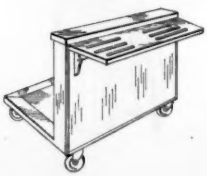


233,218
PACKAGING CONTAINER OR THE LIKE
Elmer C. Lynn, 405 Kimberly Lane, Des Moines, Iowa 50317
Filed Sept. 29, 1972, Ser. No. 293,483
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



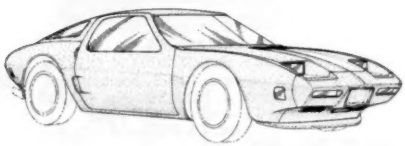
233,219
FOOTBALL BLOCKING SLED FOR FOREARM TESTING
Jerry L. O'Donnell, 3906 Onawa Drive, Waterloo, Iowa 50701
Filed June 18, 1973, Ser. No. 371,261
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—83

233,220
MOBILE SERVER FOR ICE CREAM CABINETS
Roy Emanuele, 204 Bel Air Drive, Massapequa, N.Y. 11758
Filed Jan. 7, 1972, Ser. No. 216,323
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—22

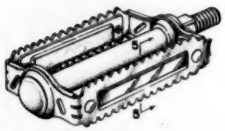


233,221
FLUID ACTUATED BELLOWS-TYPE JACK
Robert A. Clay, P.O. Box 1446, Del Rio, Tex. 78840
Filed June 22, 1973, Ser. No. 372,700
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

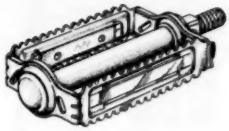
233,222
AUTOMOBILE
Jack R. Finegan, Toorak, Victoria, Australia, and John K. Wasenko, Wiesbaden, Germany, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 9, 1973, Ser. No. 414,327
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



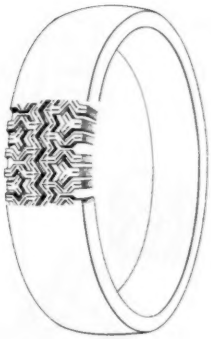
233,223
REFLECTIVE BICYCLE PEDAL
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Mar. 22, 1971, Ser. No. 127,064
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125



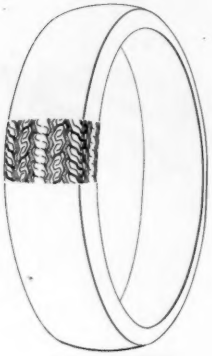
233,224
REFLECTIVE BICYCLE PEDAL
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed Jan. 8, 1973, Ser. No. 321,879
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125



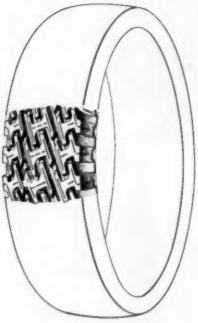
233,225
PNEUMATIC TIRE TREAD AND BUTTRESS
James H. Bierbusse, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed July 26, 1973, Ser. No. 382,788
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



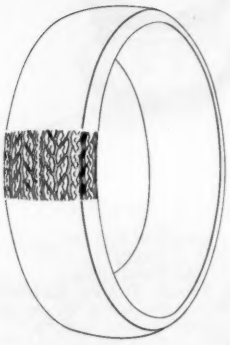
233,226
PNEUMATIC TIRE TREAD AND BUTTRESS
Carl F. Smajd, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,508
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—149



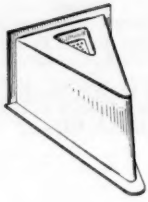
233,227
PNEUMATIC TIRE TREAD AND BUTTRESS
Carl F. Smajd, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 18, 1973, Ser. No. 361,670
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151



233,228
PNEUMATIC TIRE TREAD AND BUTTRESS
Monte D. Mehring, Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 385,218
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

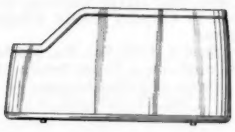


233,229
MOBILE HOME HITCH COVER
Lloyd R. Hershberger, Rte. 1, Bremen, Ind. 46506
Filed Oct. 4, 1973, Ser. No. 403,529
Term of patent 7 years
Int. Cl. D12—*10*
U.S. Cl. D12—162



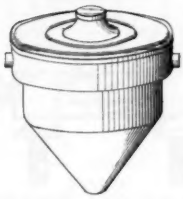
233,230
VENETIAN SHUTTER
Takeo Hashiba, 74–31 Shirahatanishi-machi, Yokohama, Japan
Filed Apr. 6, 1972, Ser. No. 241,864
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M

233,231
COMBINED MEMO PAD AND PEN HOLDER
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed Nov. 29, 1972, Ser. No. 310,280
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78

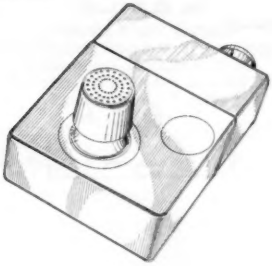


233,232
HANDLE FOR HUNTING KNIFE
Rudolf Koppe, 27 Kenninghall Blvd., Streetsville, Ontario, Canada
Filed Dec. 14, 1972, Ser. No. 315,128
Term of patent 14 years
Int. Cl. D22—*02*; D8—*03*
U.S. Cl. D22—1

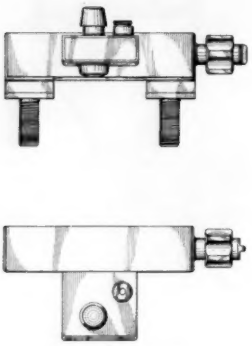
233,233
AEROBIC SEWAGE TREATMENT TANK
Patrick J. Murray, Exton, and John Robert Barry, Downingtown, Pa., assignors to Nayadic Sciences, Inc., Eagle, Uwchland, Pa.
Filed Apr. 12, 1972, Ser. No. 243,537
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



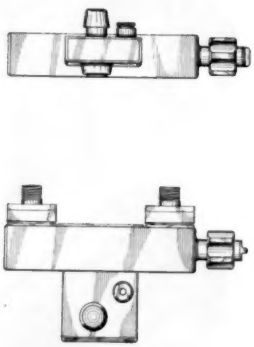
233,234
COMBINED SPOUT AND DIVERTER VALVE FOR A SHOWER OR THE LIKE
Dennis Charles Arbon, Boughton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, Gloucestershire, England
Filed Apr. 24, 1972, Ser. No. 247,257
Claims priority, application Great Britain Oct. 23, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—20



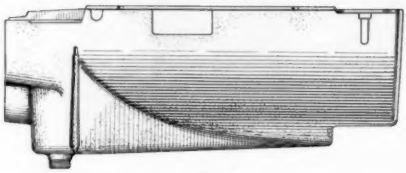
233,235
FAUCET
Dennis Charles Arbon, Boughton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, Gloucestershire, England
Filed Apr. 24, 1972, Ser. No. 247,255
Claims priority, application Great Britain Oct. 23, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



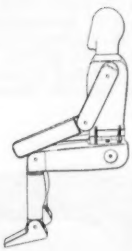
233,236
FAUCET
Dennis Charles Arbon, Boughton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, Gloucestershire, England
Filed Apr. 24, 1972, Ser. No. 247,256
Claims priority, application Great Britain Oct. 23, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



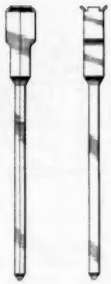
233,237
HUMIDIFIER RESERVOIR
Burton Shaffer, Lincolnwood, and Arthur A. Morgan, Arlington Heights, Ill., assignors to Hamilton Humidity, Inc., Chicago, Ill.
Filed June 12, 1972, Ser. No. 261,649
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



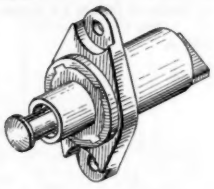
233,238
ANTHROPOMETRIC MODEL
John Edward Reid, Warwick, and Richard Joseph Cosgrove and Christopher David Mathews, Coventry, England, assignors to Chrysler United Kingdom Limited, London, England
Filed Sept. 6, 1972, Ser. No. 286,840
Claims priority, application Great Britain May 22, 1972
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



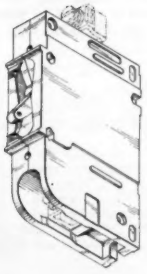
233,239
ELECTRICAL TERMINAL
David E. Welsh, Arcadia, Calif., assignor to Scanbe Manufacturing Corporation, El Monte, Calif.
Filed Mar. 9, 1972, Ser. No. 233,393
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 E



233,240
PLUNGER SWITCH
Francis C. Schmidt, Berkley, Mich., assignor to Sorenson Manufacturing Company
Filed May 14, 1973, Ser. No. 360,122
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



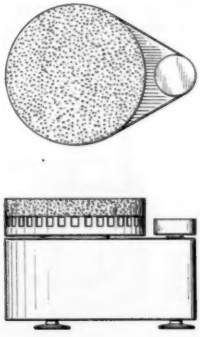
233,241
CIRCUIT BREAKER CASE
Charles Mune, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Original design application Aug. 2, 1971, Ser. No. 168,534, now Patent No. 230,275. Divided and this application Feb. 4, 1974, Ser. No. 439,588
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



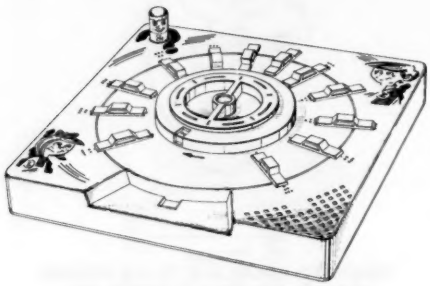
233,242
MILITARY PLAQUE OR SIMILAR ARTICLE
Morley Brotman, Tacoma, Wash., assignor to Morley Studios, Tacoma, Wash.
Filed Sept. 8, 1972, Ser. No. 287,408
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

233,243
COMBINED CROSS AND PEACE SYMBOL
Marvin Le Croy Hicks, 22 Melville Ave., Greenville, S.C. 29605
Filed Apr. 11, 1973, Ser. No. 349,964
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

233,244
LABORATORY MIXER
Robert Stannis Quandt, Deerfield, Ill., assignor to Sybron Corporation, Rochester, N.Y.
Filed Mar. 26, 1973, Ser. No. 344,916
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D32—2

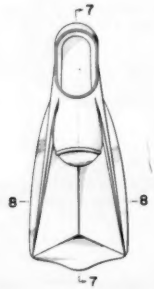


233,245
EDUCATIONAL GAME BOARD
Walter Hesener, 66 Rue de la Prulay, Geneva, Switzerland
Filed July 6, 1972, Ser. No. 269,426
Claims priority, application Switzerland Jan. 17, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



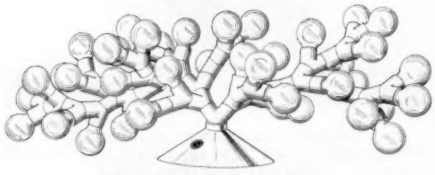
233,246
SHUTTLECOCK
Frank William Popplewell, Saffron Walden, England, assignor to Dunlop Limited, Erdington, Birmingham, England
Filed Oct. 24, 1972, Ser. No. 301,214
Claims priority, application Great Britain Apr. 29, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 SH

233,247
SWIMMER'S FOOT FIN
Kazuo Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Tabata (also known as Tabata Co., Ltd.), Tokyo, Japan
Filed Sept. 14, 1972, Ser. No. 289,100
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—44

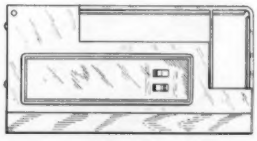


233,248
CHARM OR SIMILAR ARTICLE
Bernard Bernstein, 3224 Bronx Blvd., Bronx, N.Y. 10467
Filed Jan. 26, 1973, Ser. No. 327,186
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17

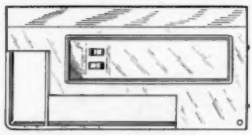
233,249
MULTIBULB LAMP TREE
Reiner Lubge, 271 Warren St., New York, N.Y. 11201, and Herbert Lubalin, 1024 W. Broadway, Woodmere, N.Y. 11598
Filed Mar. 27, 1973, Ser. No. 345,909
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A



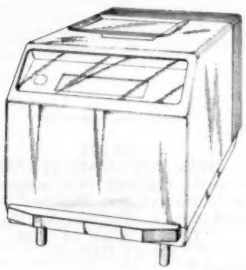
233,250
PORTABLE FLUORESCENT LANTERN
Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Sept. 7, 1972, Ser. No. 286,858
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



233,251
COMBINATION FLUORESCENT AND INCANDESCENT LANTERN
Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Sept. 7, 1972, Ser. No. 286,859
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R

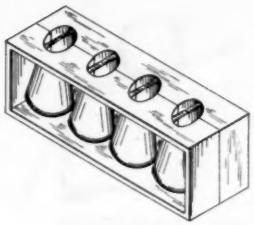


233,252
ELECTRONIC WEIGHING SCALE
Diethelm Utzinger, Zurich, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland
Filed May 15, 1973, Ser. No. 360,576
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10 R

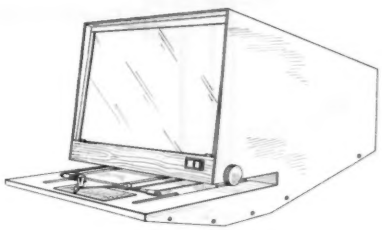


233,253
MOBILE HOT FOOD SERVER
Roy Emanuele, Massapequa, N.Y., assignor to Institutional Maintenance Corp., Brooklyn, N.Y.
Filed Jan. 7, 1972, Ser. No. 216,327
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D55—1 E

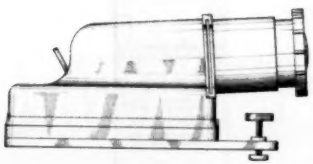
233,254
CANDLE MOLD
Zachary P. Abuza, 19425 Van Aken 44122, and Stanley W. Morgenstern, 2887 Broxton 44120, both of Shaker Heights, Ohio
Filed Jan. 26, 1972, Ser. No. 221,122
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 F



233,255
MICROFICHE VIEWER
Peter Joseph Hall, Willowdale, Ontario, Canada, assignor to Microfilm Recording Co. Ltd., Weston, Ontario, Canada
Filed Jan. 29, 1973, Ser. No. 327,478
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



233,256
SLIDE PROJECTOR
Curtiss M. Peasley, 25 Boulder Drive, Burlington, Mass. 01803
Filed Feb. 20, 1973, Ser. No. 334,053
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 J

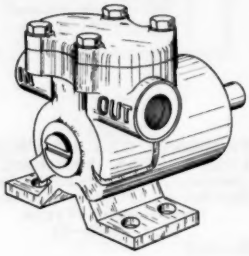


233,257
ADJUSTABLE-HEAD ELECTRONIC FLASH UNIT
Wilfried Holtje, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed July 16, 1973, Ser. No. 379,559
Claims priority, application Germany Jan. 18, 1973
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F

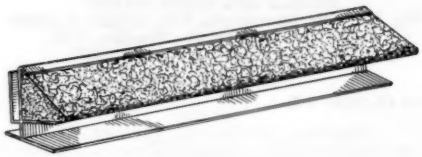
233,258
ADJUSTABLE-HEAD ELECTRONIC FLASH UNIT
Claus Prochnow and Werner Steinbock, Braunschweig, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed July 16, 1973, Ser. No. 379,560
Claims priority, application Germany Jan. 18, 1973
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F

233,259
ADJUSTABLE-HEAD ELECTRONIC FLASH UNIT
Claus Prochnow and Werner Steinbock, Braunschweig, and Jochen Kramer and Hans Schönfeld, Wolfsburg, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Oct. 26, 1973, Ser. No. 410,250
Claims priority, application Germany May 9, 1973
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F

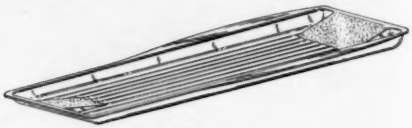
233,260
PUMP
Harry J. Sadler, St. Paul, and Ramon Pareja and John Leschisin, Minneapolis, Minn., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Continuation-in-part of abandoned design application Ser. No. 195,064, Nov. 2, 1971. This application May 24, 1972, Ser. No. 256,633
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R

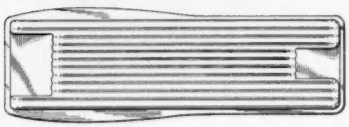


233,261
DESK TOP MEMO STAND
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1973, Ser. No. 361,584
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C

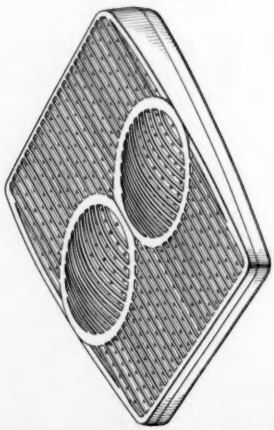


233,262
WATER HOLDING TUB FOR SUN TANNING
James R. Tersch, 4725 E. Marie Lane, Minneapolis, Minn. 55422, and Walter J. Mattila, Minneapolis, Minn.; said Mattila assignor to said Tersch
Filed Sept. 29, 1972, Ser. No. 297,398
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 C





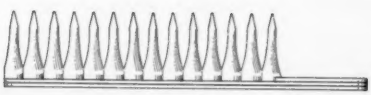
233,263
HYDROTHERAPEUTIC PAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed July 30, 1973, Ser. No. 383,816
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C



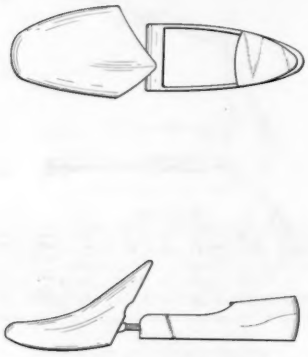
233,264
COMBINATION MYRINGOTOMY TUBE INSERTER AND ASPIRATOR
James L. Geraci and David L. Walchle, Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed Nov. 17, 1972, Ser. No. 307,581
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A

233,265
MYRINGOTOMY KNIFE
David L. Walchle, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Nov. 17, 1972, Ser. No. 307,582
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

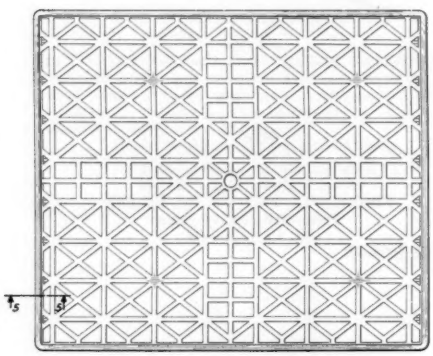
233,266
TOUPEE COMB
R. Glenn Herrin, Rte. 3, Box 81, Oliver Springs, Tenn. 37840
Filed May 21, 1973, Ser. No. 362,045
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



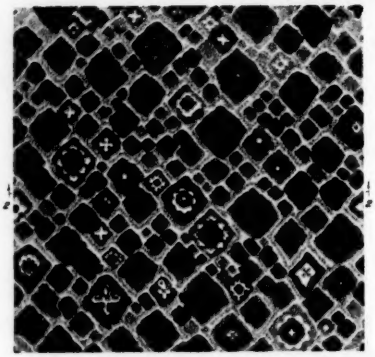
233,267
SHOE DISPLAY TREE
Robert C. Smith, Camden, N.Y., assignor to Rochester Shoe Tree Co., Inc., East Rochester, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,883
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D86—10 D



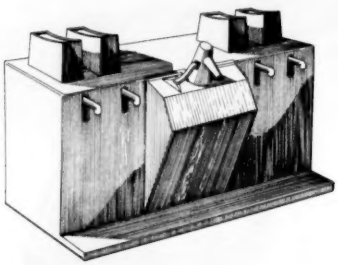
233,268
BAKERY TRAY OR THE LIKE
Hugh B. Fraser and Gale S. Roush, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed May 26, 1972, Ser. No. 257,489
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



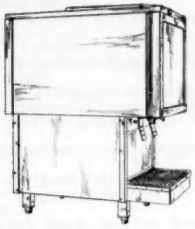
233,269
SOFT SURFACE FLOOR COVERING
Gerald E. White, Albertson, N.Y., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Mar. 12, 1973, Ser. No. 340,308
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4 R



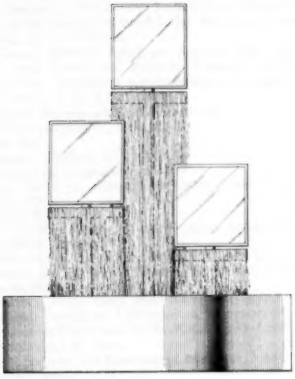
233,270
PORTABLE BEVERAGE DISPENSER
Thomas M. McTigue, St. Matthews, Ky., assignor to Tempus, Inc., Jefferson County, Ky.
Filed Nov. 30, 1972, Ser. No. 310,993
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B

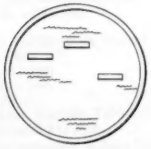


233,271
JUICE DISPENSER OR SIMILAR ARTICLE
Donald E. Holcomb, Brooklyn Center, Minn., assignor to The Cornelius Company, Golden Valley, Minn.
Filed Dec. 29, 1972, Ser. No. 319,866
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 A



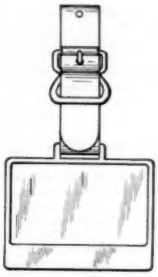
233,272
COMBINED SIGN AND FOUNTAIN
William D. King, Jr., Glendale, Calif., assignor to Pan Nova, Inc., Santa Fe Springs, Calif.
Filed Aug. 2, 1972, Ser. No. 277,305
Term of patent 14 years
Int. Cl. D20—*03*; D23—*01*
U.S. Cl. D96—12 N





233,273
AUTOMOTIVE EMBLEM
John Matosian, 1222 Feather St., Anaheim, Calif. 92802
Filed May 18, 1973, Ser. No. 361,687
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R

233,274
LUGGAGE IDENTIFICATION TAG
William S. Klitzner, 1 Timberland Drive, Lincoln, R.I. 02865
Filed Feb. 20, 1973, Ser. No. 333,491
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D96—13



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF OCTOBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Dorfel, Gerhard Walter, 3,841,578.

A. O. Smith Corporation: *See—*
Pleiss, Bernard J., Jr.; and Surmacz, Theodore J., 3,842,297.

A-T-O Inc.: *See—*
Carter, Sidney T., 3,841,946.

A/S Apothekernes Laboratorium for Specialpraeparator: *See—*
Nettli, Per, 3,842,003.

Aaron, Colin; Edwards, Alan Harold; and Tessier, Keith Campbell, to Esso Research and Engineering Company. Hydrocarbon oil containing ethylene copolymer pour depressant. 3,841,850, Cl. 44-62.000.

AB Kabi: *See—*
Andersson, Lars-Olof; and Andersson, Maggie Miller, 3,842,061.

AB Welin: *See—*
Nilsson, Per; and Bergstedt, Bertil, 3,841,439.
Nilsson, Per; and Bergstedt, Bertil, 3,841,539.

Abbott Laboratories: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,842,069.
Tadinier, John Soloman; and Martin, Jerry Roy, 3,842,068.

Absher, Larry R.; and Woodie, Richard M. Air treating apparatus. 3,841,063, Cl. 55-228.000.

ACF Industries, Incorporated: *See—*
Hammonds, James C.; and O'Leary, Walter E., 3,841,236.

Acomb, Byron Hillen, to Union Carbide Corporation. Anti-surge oxygen cylinder valve. 3,841,353, Cl. 137-630.000.

Acushnet Company: *See—*
Jepson, John W.; Lyon, Herbert W.; and Brown, Robert A., 3,841,199.

Adams, Clarence Maurice, to Swiss Aluminium Ltd., mesne. Universal lock device for right hand or left hand applications. 3,841,768, Cl. 403-3.000.

Adams, Heribert: *See—*
Koenig, Walter; and Adams, Heribert, 3,841,415.

Adams, James E., Jr.: *See—*
Haas, Warner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., 3,842,275.

Adams, Kenneth D.; and Greulic, Robert G., to Singer Company, The. Needle thread tensioning module for lock stitch sewing machines. 3,841,248, Cl. 112-254.000.

Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Xanthenyl semicarbazides as gastric antisecretory agents. 3,842,178, Cl. 424-283.000.

Addressograph-Multigraph Corporation: *See—*
Blanchette, Robert G., 3,841,871.

Aero-Dyne: *See—*
Culpepper, Clifford, Jr., 3,841,434.

AGFA-Gevaert Aktiengesellschaft: *See—*
Fergg, Berthold; Zahn, Wolfgang; and Hujer, Friedrich. 3,841,936.

Agfa-Gevaert N.V.: *See—*
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Vandenabeele, Hubert, 3,841,878.
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.

Agraz-Guerena, Jorge; Gary, Paul Alexander; and Lepselter, Martin Paul, to Bell Telephone Laboratories, Incorporated. Method of integrated circuit fabrication. 3,841,918, Cl. 148-1.500.

Aida Engineering, Ltd.: *See—*
Harada, Suguru; and Kuroyanagi, Moritaka, 3,841,143.

Air Knife, Inc.: *See—*
Henderlit, James H., III, 3,841,911.

Air Pollution Industries, Incorporated: *See—*
Pike, Daniel E., 3,841,061.

Air Products and Chemicals, Inc.: *See—*
Erby, William A.; and Tompkins, James F., 3,842,126.
Iacoviello, John G., 3,841,960.

Airco, Inc.: *See—*
Bryant, Gerald T.; and Mayfield, James L., 3,841,520.
Hay, Wayne W., 3,841,327.
Sielaff, Ulrich, 3,841,560.
Slack, Don S., 3,841,344.

Ajinomoto Co., Inc.: *See—*
Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, 3,841,966.

Akahane, Tatsuro, to Kabushiki Kaisha Suwa Seikosha. Watertight watch case. 3,841,085, Cl. 58-90.00r.

Akashi, Naotomo, to Nippon Sheet Glass Co., Ltd. Apparatus for producing a ribbon-like glass having a metal oxide coating formed thereon. 3,841,858, Cl. 65-181.000.

Aktiebolaget Bofois: *See—*
Falcone, Francesco; and Hunnes, Odd Peder, 3,841,429.

Aktiengesellschaft Oederlin & Cie. Armaturenwerk Wettingen: *See—*
Amblank, Robert, 3,841,346.

Aktieselskabet de Danske Sukkerfabrikker: *See—*
Giersing, Jorgen, 3,841,908.

Akzona Incorporated: *See—*
Greven, Hendrik Marie, 3,842,064.

Albach, Robert W.; Mathers, Kenneth R.; and Carlson, Reuben T., to Niagara Therapy Manufacturing Corporation. Hand manipulated body massager. 3,841,321, Cl. 128-36.000.

Albertassi, James H.: *See—*
Tufts, Wesley M.; and Albertassi, James H., 3,840,914.

Albright & Wilson Limited: *See—*
Collier, John Richard; and Porter, Alan Sidney, 3,842,093.

Aldridge, Lionel Dennis; and Bunnell, Edward Dennman, to AMP Incorporated. Pre-loaded electrical connectors, assembly apparatus and method. 3,842,392, Cl. 339-47.00r.

Allamanna Svenska Electriska Aktiebolaget: *See—*
Nilsson, Jan, 3,841,128.

Allegheny Ludlum Industries, Inc.: *See—*
Burk, David L., 3,841,385.

Allen, Errol V.: *See—*
Gordon, Richard Lee; and Allen, Errol V., 3,842,366.

Allen, Walter E., to Paul, Peter, Electronics. Compensating plunger for solenoid valve and method of making. 3,840,959, Cl. 29-157.10r.

Allen, William Douglas; and Morris, Michael, to Science Research Council. Electrostatic generator. 3,842,293, Cl. 310-6.000.

Allen-Bradley Company: *See—*
Schlicke, Heinz M., 3,842,374.

Allied Chemical Corporation: *See—*
Fuhrmann, Robert; Koff, Fred W.; and Sifniades, Stylianos, 3,842,073.
Lewis, Donald J., 3,841,654.
Wilder, Marion Archer; Ward, Charles Spurgeon; and Ward, Allen Edens, 3,841,159.
Woolf, Cyril; Clifford, Bryce; and Beyleveld, Wilhelmus Maria, 3,842,127.
Young David E.; Gould, Douglas E.; Anderson, Lowell Ray; and Fox, Wiliam B., 3,842,156.

Allis-Chalmers Corporation: *See—*
Wagner, Robert J., 3,841,696.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Boksjo, Carl Ingvar, 3,842,335.
Karlsson, Signar, 3,841,688.

Allmanna Svenska Elektriska Aktiegolaget: *See—*
Ekstrom, Ake; Juhlin, Lars-Erik; and Olsson, Karl-Erik, 3,842,337.

Alston, Robert B.: *See—*
Burnett, David B.; and Alston, Robert B., 3,841,403.

Altenburger, Otto; and Dorazio, Alton, Jr., to Stromberg-Carlson Corporation. Path finding system. 3,842,214, Cl. 179-18.0ea.

Aluminum Company of America: *See—*
Russell, Allen S.; Jarrett, Noel; and Stoup, Philip T., 3,842,163.

Amblank, Robert, to Aktiengesellschaft Oederlin & Cie. Armaturenwerk Wettingen. Pivotable outlet insertable in plumbing. 3,841,346, Cl. 137-119.000.

Amemiya, Shigeo: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.

American Cyanamid Company: *See—*
Berkelhammer, Gerald; and Asato, Goro, 3,842,174.
Booth, Robert Ben, 3,842,013.
Brand, William W.; and Bullock, Milon Walker, 3,842,096.

American Home Products Corporation: *See—*
Henniger, Peter Wolfgang, 3,842,077.
McKinley, Wayne A.; and Sarantakis, Dimitrios, 3,842,066.
Rees, Richard W., 3,842,065.
Sarantakis, Dimitrios, 3,842,067.

American Metal Climax, Inc.: *See—*
Barry, Henry F.; Hallada, Calvin J.; and Moore, Fred W., 3,842,009.

American Optical Corporation: *See—*

Coates, Vincent John; Welter, Leonard M.; and Gold, James J., 3,842,272.
Daynard, Richard F., 3,841,336.
Dianetti, Joseph C., 3,842,254.
Gee, Alan E.; and Snitzer, Elias, 3,842,271.
Walker, Terence; and Dianetti, Joseph C., 3,842,253.

American Telecommunications Corporation: *See—*
Tucker, Council A., 3,842,395.

AMF Incorporated: *See—*
Walsh, Richard David; and Baugher, James Edward, 3,841,633.

Amoco Production Company: *See—*
Moote, Truman P.; and Vandaveer, Roscoe F., 3,841,405.

Amos, David J., to Westinghouse Electric Corporation. Turbomachine blade lock and seal device. 3,841,792, Cl. 415-172.000.

AMP Incorporated: *See—*
Aldridge, Lionel Dennis; and Bunnell, Edward Dennman, 3,842,392.
Coller, James Ray, 3,840,962.
Dechetette, Helen, 3,842,391.
Glover, Douglas Wade; and Kopenhaver, Kenneth Oscar, 3,842,389.
Glover, Douglas Wade; and Herrmann, Henry Otto, Jr., 3,842,390.
Glover, Douglas Wade; Kopenhaver, Kenneth Oscar; and Geib, Ralph Larry, 3,842,393.
Harwood, Robert George; and Hoover, Charles Donald, 3,842,388.
Long, Alden Owen, Jr., 3,840,964.
Olsson, Billy Erik, 3,842,396.

Ampex Corporation: *See—*
Emmons, Lawrence D., 3,842,312.

Amtel, Inc.: *See—*
Koppelmann, Eldo K., 3,840,957.

Amtmann, Hans H.; and Macken, Thomas, to General Atomic Company. Concrete pressure vessel. 3,841,035, Cl. 52-21.000.

Anaconda Company, The: *See—*
Johnson, Daniel B., 3,842,193.

Anagnostou, Taki J.; Dixon, Norman B.; and Sastry, Gundu M., to Chrysler Corporation. Polymeric solder composition. 3,842,023, Cl. 260-23.70h.

Analog Devices, Incorporated: *See—*
Spofford, Walter R., Jr., 3,842,412.

Anderson, Bruce M., to Sperry Rand Corporation. Circuit for implementing rounding in add/substract logic networks. 3,842,250, Cl. 235-175.000.

Anderson, Charles E., to ESB Incorporated. Unitary cathode cover. 3,841,913, Cl. 136-107.000.

Anderson, John H. Trailer hitch guard. 3,841,664, Cl. 280-507.000.

Anderson, Karl R., to Thompson, John T. and Gillemot, George W. Method of using gang connector and patching cable assembly. 3,842,219, Cl. 179-175.250.

Anderson, Lowell Ray: *See—*
Young David E.; Gould, Douglas E.; Anderson, Lowell Ray; and Fox, Wiliam B., 3,842,156.

Anderson, Paul T.; and Ramsey, James B., to Westinghouse Electric Corporation. Electric control device. 3,842,383, Cl. 337-151.000.

Anderson, Theodore Carl, to Bell Telephone Laboratories, Incorporated. Apparatus and method for measuring envelope delay utilizing -point technique. 3,842,247, Cl. 235-152.000.

Andersson, Lars-Olof; and Andersson, Maggie Miller, to AB Kabi. Method for isolation of antithrombin from animal tissue material by adsorption on sulfated carbohydrate gel. 3,842,061, Cl. 260-112.00b.

Andersson, Maggie Miller: *See—*
Andersson, Lars-Olof; and Andersson, Maggie Miller, 3,842,061.

Anderton, John J.; Dudzic, Max S.; and Wrhen, Wilmer C. Curved roll-rack frame construction. 3,841,389, Cl. 164-282.000.

Ando, Shigeru; and Miyazawa, Takayuki, to Mitsubishi Denki Kabushiki Kaisha. Data retrieval system. 3,841,729, Cl. 350-3.500.

Andriessen, Wilhelmus: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, 3,841,582.

Andros, Andrew; and Lukitsch, Joseph, to Matthews, Jas., H., & Company. Urn storage assembly. 3,841,726, Cl. 312-111.000.

ANF Frangeco S.A.: *See—*
Pealabon, Andre E., 3,842,290.

Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., to Blaw-Know Food and Chemical Equipment, Inc. Process and apparatus for continuously roasting bean-like materials. 3,841,826, Cl. 432-2.000.

Anner, Georg; and Kalvoda, Jaroslav, to Ciba-Geigy Corporation. 18-Methylene-steroids of the pregnane series. 3,842,074, Cl. 260-239.55c.

Anritsu Electric Co., Ltd.: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Antrim, Warren W.: *See—*
Newsock, Roger L.; and Antrim, Warren W., 3,841,452.

Aoki, Eiichiro, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument provided with devices for indicating preset state of respective voices. 3,842,183, Cl. 84-1.120.

Apostoleris, Theodore G., to Ford Motor Company. Electrical snap-in terminal and brush housing and method of assembly. 3,842,302, Cl. 310-239.000.

Appleby, Brian Lawrence; Malpass, Alan; and Ellis, Kenneth Harold, to Lucas Aerospace Limited. Actuating arrangements for aircraft control surfaces. 3,841,589, Cl. 244-77.00f.

Appleby, Paul E.; Braden, William D.; and Vandale, Leonard A., to Goodyear Tire & Rubber Company, The. Tire manufacturing. 3,841,033, Cl. 51-289.00r.

Applewhite, William M. Tractor attachment bar assembly with retractable portions. 3,841,413, Cl. 171.311.000.

Applied Power Inc.: *See—*
Reynolds, Roy; and Clark, Raymond, 3,841,693.

Arbman Development AB: *See—*
Watterback, Paul Gunnar, 3,841,177.

Arcilesi, Donald A., to M&T Chemicals Inc. Method of preparing surfaces for electroplating. 3,841,979, Cl. 204-38.00b.

Arff, Uwe F.; and Edwards, Gordon J., to Outboard Marine Corporation. Saw chain lubrication means. 3,840,991, Cl. 30-383.000.

Argyle, Bernell E.; and Di Stefano, Thomas H., to International Business Machines Corporation. Inductive sensor for magnetic bubble domain detection. 3,842,407, Cl. 340-174.0tf.

Ariyan, Zaven S.; and Harrison, William A., to Uniroyal, Inc. and Uniroyal Ltd. Pharmaceutical compositions containing a 4-substituted-2-(3-pyridyl)thiazole and methods of using same. 3,842,172, Cl. 424-263.000.

Arizona Chemical Company, mesne: *See—*
Davis, Curry Beach; and McBridge, Joseph J., Jr., 3,842,135.

Arken, Theodore: *See—*
Mallery, Lawrence E.; Arken, Theodore; and Swenson, Henning C., Jr., 3,841,154.

Armco Steel Corporation: *See—*
Hacker, Leon, 3,841,808.

Armflex, Inc.: *See—*
Bullard, Calvin Penfield, 3,841,499.

Armistead, William H.; Elmer, Thomas H.; and Lichtenstein, Ivan E., to Corning Glass Works. Process for depositing noble metal catalysts on oxide carriers. 3,842,017, Cl. 252-474.000.

Armitage, Bernard John: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,842,178.

Arndt, Walter R., to United States of America. Passive ranging interferometer system. 3,842,419, Cl. 343-112.00d.

Arnold, Alison M.; Hapke, Donald W.; and Traeger, Frank J., Jr., to Boeing Company, The. Asymmetric augmentation of wing flaps. 3,841,588, Cl. 244-42.0cc.

Arnold, Dan M.; and Pitts, Robert W., Jr., to Texaco Inc. Radiological well logging methods and apparatus for reducing the effect of activation from the detector crystal. 3,842,264, Cl. 250-264.000.

Arras, Juho, to Telefonaktiebolaget L M Ericsson. Method for detecting faults in regenerators in a PCM-system. 3,842,220, Cl. 179-175.31r.

Aruga, Shiro: *See—*
Torigoe, Masataka; Nakano, Kazuaki; and Aruga, Shiro, 3,842,056.

Asahara, Yoshiyuki; and Izumitani, Tetsuro, to Hoya Glass Works, Ltd. Use of Cu-As-Se glass to transmit long wavelength radiation. 3,841,739, Cl. 350-320.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Saito, Kunio; Ishii, Tatsuo; and Seta, Shigetoshi, 3,842,029.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasski, Masahiro, 3,842,428.
Takahashi, Yasuo; and Okudaira, Sadao, 3,841,736.

Asahi-Dow Limited: *See—*
Hoshino, Shohei, 3,841,266.

Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, to Ajinomoto Co., Inc. Method of preparing an optically active amino acid for a salt of an acyl derivative thereof in the racemic form. 3,841,966, Cl. 195-2.000.

Asato, Goro: *See—*
Berkelhammer, Gerald; and Asato, Goro, 3,842,174.

Associated Electrical Industries Limited: *See—*
Friedlander, Eirch Siegfried; and Thanawala, Hemesh Laxmidas, 3,842,342.

Associated Weavers Limited: *See—*
Wilford, Ernest, 3,841,566.

Ast, Herbert H.; and Bradley, Wilson, Jr., said Ast assor. to said Bradley, Wilson, Jr. High performance transducer. 3,842,385, Cl. 338-32.00r.

Ateliers de la Haute-Garonne Etablissements Auriol & Cie: *See—*
Auriol, Jean Marc, 3,840,980.

Atkins, Carl E., to Wager Electric Corporation. Induction-keyed control circuit with keying network having variable resonant frequency. 3,842,324, Cl. 317-146.000.

Atkins, Kenneth E.: *See—*
Harpold, Michael A.; and Atkins, Kenneth E., 3,842,142.

Atkinson, Edward S., to National Steel Corporation. Coating thickness control and fluid handling. 3,841,557, Cl. 239-11.000.

Atlanta Stove Works, Inc.: *See—*
Chamberlain, Albert B., 3,841,301.

Atlantic Richfield Company: *See—*
Wunderlich, Donald K.; and Skinner, James L., 3,841,993.
Wunderlich, Donald K.; and Skinner, James L., 3,841,994.

Atsuta, Hisayoshi; Ueda, Teiji; and Koezuka, Yokichi, to Kabushiki Kaisha Komatsu Seisakusho. Method and apparatus for setting self-moving bolster in presses. 3,841,142, Cl. 72-448.000.

Aubee, Eugene C. J., Jr. Concrete form tie rod assembly. 3,841,600, Cl. 249-213.000.

Auriol, Jean Marc, to Ateliers de la Haute-Garonne Etablissements Auriol & Cie. High strength rivetted plate joint. 3,840,980, Cl. 29-522.000.

Austral-Erwin Engineering Co., mesne: *See—*
Erwin, Ransome W., 3,841,937.

Automated Building Components, Inc.: *See—*
Jureit, John Calvin, 3,841,195.

Automatic Radio Mfg. Co., Inc.: *See—*
Pierrat, Michel A., 3,841,108.

Automecha, Ltd.: *See—*
Brown, Frank H., 3,841,621.

Automobiles Peugeot: *See—*
Dera, Alain; Fayolle, Michel; and Maistrelli, Roger, 3,841,681.
Lombard, Claude Edmond, 3,842,299.

Avco Corporation: *See—*
Murphy, John V., 3,841,220.
Stein, Wolfgang J.; and Straniti, Salvatore, 3,841,790.

Awais, George M. Heat-insulating shield for speculum. 3,841,317, Cl. 128-17.000.

AWT Systems, Inc.: *See—*
Miller, Clarence S., Jr.; and Seely, George A., 3,841,465.

Aycock, Inc.: *See—*
Dronick, Lester Alexander; and Zimmerman, Edwin Henry, 3,841,495.

B/W Metals Company, Inc.: *See—*
Weddendorf, Elmer R., 3,841,440.

Baba, Yutaka: *See—*
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.

Babbitt, John H., Jr.; Boyer, Ronald G.; and Olt, Arthur E., Jr., to Caterpillar Tractor Co. Roll structure cab and seat arrangement for track-type tractors. 3,841,430, Cl. 180-89.00a.

Baber, James R.: *See—*
Bennett, Ronald W.; and Baber, James R., 3,841,204.

Bachmann, Horst, to Langestein & Schemann Aktiengesellschaft. Method and apparatus for the forming of a long workpiece. 3,841,139, Cl. 72-420.000.

Bacso, Imre; and Coombs, Robert V., to Sandoz-Wander, Inc. 17-Alpha-propadienyl-substituted steroids. 3,842,104, Cl. 260-397.400.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Belde, Horst; Oppenlaender, Knut; Daubach, Ewald; and Fikentscher, Rolf, 3,841,888.
Graser, Fritz; and Kilpper, Gerhard, 3,842,083.
Graser, Fritz, 3,842,084.
Graser, Fritz, 3,842,101.
Koehler, Waldemar; Riedel, Oswald; Scherer, Herbert; and Schlereth, Georg, 3,841,155.
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, 3,841,907.
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, 3,841,582.
Schrempp, Klaus, 3,841,889.

Bailey, Carl W., III: *See—*
Falkehag, Sten I.; and Bailey, Carl W., III, 3,841,887.

Bailey Meter Company: *See—*
Hunter, Richard C., 3,841,158.

Bailey, Philip S.: *See—*
Chang, Yun Ger; and Bailey, Philip S., 3,842,129.

Baker, Donald Brooks, to Bird Machine Company, Inc. Liquid extracting apparatus and method. 3,841,910, Cl. 134-15.000.

Baker, James P., to Weatherhead Company, The. Motor vehicle fluid power circuit. 3,841,095, Cl. 60-404.000.

Baker Oil Tools, Inc.: *See—*
Callihan, Rudy B.; and Wainwright, Clyde S., Jr., 3,841,400.

Balamuth, Lewis; Rutten, Michael R.; and Meyer, Robert, to Ultrasonic Systems, Inc. Ultrasonic toothbrush applicator. 3,840,932, Cl. 15-167.00r.

Baldwin, D. H., Company: *See—*
Bunger, David A., 3,842,182.

Baldwin, Willett F., to Mobil Oil Corporation. Sand detection probe. 3,841,144, Cl. 73-61.00r.

Balwe, Thomas: *See—*
Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, 3,842,055.

Bando Kiko Co., Ltd.: *See—*
Bando, Shigeru, 3,841,027.

Bando, Shigeru, to Bando Kiko Co., Ltd. Glass plate edge grinding machine. 3,841,027, Cl. 51-110.000.

Bantel, Otto: *See—*
Berg, Rudolph; Bantel, Otto; and Taylor, Howard D., 3,840,937.

Banyas, John D.; and Wallington, Frederick L., to Owens-Illinois, Inc. Container handling apparatus. 3,841,687, Cl. 294-64.00r.

Baran, Miroslav, to Bata Shoe Co., Inc. Electromagnetic cutting apparatus particularly for use, etc. 3,841,185, Cl. 83-364.000.

Barber-Colman Company: *See—*
Townsend, Franklin L., 3,840,951.

Barkan, Philip, to General Electric Company. Electric bus with joint for accommodating earthquake-produced motion of parts. 3,842,187, Cl. 174-38.000.

Barker, Roger M.: *See—*
Garner, Derek H.; Bosworth, George H.; and Barker, Roger M., 3,840,929.

Barker, Sidney Alan: *See—*
Emery, Anthony Nicholas; Barker, Sidney Alan; and Novais, Julio Maggioly, 3,841,969.

Barlow, Gordon A., to Marvin Glass & Associates. Game apparatus. 3,841,629, Cl. 273-1.00r.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Lenk, Erich; Busch, Hansjochen; and Greb, Manfred, 3,841,574.

Barndt, Charles H., 80% interest to Martin, Clemence G. Magnetic switch. 3,842,377, Cl. 335-207.000.

Barnes, Marion W., to Universal Oil Products Company. High temperature heater for fluids. 3,841,274, Cl. 122-356.000.

Barnes, Thomas G., to Globe Universal Sciences, Inc. Electro-extraction process. 3,841,984, Cl. 204-149.000.

Barnett, Gerald J., to Gem Electro-Magnetics Company, Inc. Foldable outer extensions of a laminated core structure. 3,842,379, Cl. 335-297.000.

Barrows, John B.; and Hansen, Leslie T., to Sweco, Inc. Self-cleaning screen assembly. 3,841,482, Cl. 209-323.000.

Barry, Henry F.; Hallada, Calvin J.; and Moore, Fred W., to American Metal Climax, Inc. Molybdenum disulfide containing lubricant. 3,842,009, Cl. 252-25.000.

Barselloti, John Anthony; Laliccia, Federico Riccardo; and Litster, John Fraser, to International Standard Electric Corporation. Transponder for meter reading telemetering system. 3,842,206, Cl. 179-2.00a.

Bartley, John E., to Zeta International Engineering, Inc. Automatic welding assembly. 3,841,547, Cl. 228-29.000.

Barwise, Robert D. Load handling apparatus. 3,841,507, Cl. 214-92.000.

Basic Sciences, Inc.: *See—*
Scott, Harold W.; and Eversole, Russell A., 3,841,976.

Bastide, Pierre: *See—*
Dayet, Jacques; Bastide, Pierre; and Besson, Marcel, 3,842,221.

Bata Shoe Co., Inc.: *See—*
Baran, Miroslav, 3,841,185.

Batenburg, Abram, to Westinghouse Electric Corporation. Peak detector. 3,842,356, Cl. 328-150.000.

Bates, William G.: *See—*
Montgomery, William S., Jr.; Marceau, William E.; and Bates, William G., 3,841,855.

Battelle Development Corporation: *See—*
Dawson, Gaynor W., 3,842,000.
Genequand, Pierce, 3,842,267.

Battelle Memorial Institute: *See—*
Gordon, Richard Lee; and Allen, Errol V., 3,842,366.

Bauer, Johann: *See—*
Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, 3,842,055.

Baugher, James Edward: *See—*
Walsh, Richard David; and Baugher, James Edward, 3,841,633.

Baum, Heinz; Camp, Eckart Op Den; Schrader, Gert; and Botteril, John Redvers, to Deutsche Bendix Ausrustungs GmbH. Disc brake with anti-rattle spring hold down means. 3,841,444, Cl. 188-72.300.

Bayer Aktiengesellschaft: *See—*
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,175.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,176.
Scherhab, Berng; Koppelmann, Eliahu; Wolz, Hermann; and Francque, Marc, 3,842,098.

Bayshore Concrete Products Corp.: *See—*
Van Buren, Myers, 3,841,599.

BBA Group Limited: *See—*
Lumb, John B.; and Edwards, Michael, 3,842,031.

BBC Brown Boveri & Company Limited: *See—*
Degen, Rolf; and Zimmermann, Max, 3,841,965.

Beall, Glen L.: *See—*
Carroll, Albert; and Beall, Glen L., 3,841,533.

Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, to Lechler Apparatebau KG. Tool holder for lathes. 3,840,928, Cl. 10-89.00h.

Beck, John. Semifinished universal automotive seat cover kit for custom fitted installation. 3,841,700, Cl. 297-219.000.

Beck, Richard: *See—*
Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, 3,840,928.

Becker, Edward B., to United States of America, Navy. Tetrahedral stereotaxic jig. 3,841,148, Cl. 73-65.000.

Becker, James M.: *See—*
Jackson, William E.; and Becker, James M., 3,841,493.

Becker, Kurt; and Seidel, Hans-Georg, to Heye, Hermann. Apparatus for feeding gobs of molten vitreous or plastic material into molds of a machine for forming bottles or similar containers. 3,841,859, Cl. 65-207.000.

Beckmann, Franz H. Process of manufacturing fuel briquettes. 3,841,849, Cl. 44-10.00h.

Becton, Dickinson and Company: *See—*
Eyster, Charles U., 3,840,901.

Behnert, Reinhard, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Variable nozzle for position control. 3,841,562, Cl. 239-265.290.

Belde, Horst; Oppenlaender, Knut; Daubach, Ewald; and Fikentscher, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Aqueous pigment dispersions. 3,841,888, Cl. 106-288.00q.

Bell, Lon E., to Technar Incorporated. Electro-thermal relay actuator. 3,842,382, Cl. 337-107.000.

Bell Telephone Laboratories, Incorporated: *See—*
Agraz-Guerena, Jorge; Gary, Paul Alexander; and Lepselter, Martin Paul, 3,841,918.
Anderson, Theodore Carl, 3,842,247.
Bruning, John Henry, 3,842,259.
Hurlbrink, Robert William, III, 3,841,689.
Kneuer, Joseph George; and Lawless, William Joseph, 3,842,399.
Mac Arthur, Donald Morley; and Skurkiss, Peter Kenny, 3,841,931.
Osborne, Paul Wray, 3,842,415.

Beloit Corporation: *See—*
De Noyer, Donald B., 3,841,502.

Benatt, Frank George Simon; and Gammon, Michael William, to Metallurgical Processes Limited and ISC Smelting Limited. Cooling, condensation and purification of vapours and gases. 3,841,862, Cl. 75-71.000.

Bendix Corporation, The: *See—*
Gravel, Charles R., Jr., 3,841,446.

Bennett, Gene Lee, to Genio tools, Inc. Interchangeable tool mounting device. 3,841,646, Cl. 279-14.000.

Bennett, John D.; and Chaney, Preston E., to Sun Oil Company (Delaware). Method of breaking ice. 3,841,252, Cl. 114-40.000.

Bennett, John P.; and Bliss, George D., to Syntex (U.S.A.) Inc., mesne. Process and apparatus for purifying and aerating aquaculture pools. 3,841,999, Cl. 210-17.000.

Bennett, Melvin T.: *See—*
Edwin, Allan I.; Vlach, Thomas L.; and Bennett, Melvin T., 3,841,149.

Bennett, Richard C. Putter. 3,841,641, Cl. 273-164.000.

Bennett, Richard J., to Phillips Petroleum Company. Stabilized railway bed and method of construction. 3,841,554, Cl. 238-2.000.

Bennett, Ronald W.; and Baber, James R., to General Motors Corporation. Combination end cover seal arrangement. 3,841,204, Cl. 92-86.000.

Benoit, Roland A.; and Duprey, Richard H., to Interroyal Corporation. Hospital bed with selector mechanism. 3,840,911, Cl. 5-68.000.

Bentley, Thomas P.: *See—*
Witfield, Harold B., Jr.; and Bentley, Thomas P., 3,842,152.

Benzing, Willaim M.; and Layfield, James D. Motion converter. 3,841,165, Cl. 74-56.000.

Berg, Rudolph; Bantel, Otto; and Taylor, Howard D., to Linker Machines, Inc. Separator mechanism with cutter sensor for ligature connected frankfurters. 3,840,937, Cl. 17-1.00f.

Berger, Gerhard, Fabrik Elektrischer Messgerate: *See—*
Heine, Gunter; and Borgonovi, Bruno, 3,842,332.

Berger, Irvin E. Bumper mounted rack. 3,841,544, Cl. 224-42.03b.

Bergey, John M., to Time Computer, Inc., mesne. Self-illuminated liquid crystal timepiece. 3,841,083, Cl. 58-50.00r.

Bergmann, Richard J., to United Aircraft Corporation. Snap-on lock for turbomachinery blades. 3,841,794, Cl. 416-221.000.

Bergstedt, Bertil: *See—*
Nilsson, Per; and Bergstedt, Bertil, 3,841,439.
Nilsson, Per; and Bergstedt, Bertil, 3,841,539.

Berkelhammer, Gerald; and Asato, Goro, to American Cyanamid Company. Substituted nitroimidazolylthiadiazoles and oxadiazoles as antiprotozoal agents. 3,842,174, Cl. 424-270.000.

Bernardi, Luigi; De Castiglione, Roberto; and Colonna, Vincenzo. Methylenetetracycline formate ester. 3,842,123, Cl. 260-490.000.

Bernatt, Joseph; and Rogers, Edward J., to S & C Electric Company. Integral fuse and switch support for metal-enclosed switch gear. 3,842,381, Cl. 337-7.000.

Berry, James S. Electrical control system. 3,841,825, Cl. 431-66.000.

Berta, Michael A.; and Jones, Claude R., to United States of America, Air Force. Radioactive preionization method and apparatus for pulsed gas lasers. 3,842,284, Cl. 250-493.000.

Berthiez, Charles William. Production of bodies of revolution. 3,841,200, Cl. 9-15.00r.

Berthold Fototype G.m.b.H.: *See—*
Wingerter, Franz, 3,841,579.

Bertin, Ira L.: *See—*
Bertin, Mannie; and Bertin, Ira L., 3,841,209.

Bertin, Jean Henri, to Societe De L' "Aerotrain" Puteaux. Tracks along which ground-effect machines in particular travel. 3,841,223, Cl. 104-23.0fs.

Bertin, Mannie; and Bertin, Ira L. Diffusers for conditioned air. 3,841,209, Cl. 98-121.00a.

Bertolacini, Ralph J.; Hopkins, Paul Donald; and Menzl, Roland L., to Standard Oil Company. Two-zone hydrogenation process for the production of colorless mineral oil. 3,841,995, Cl. 208-89.000.

Besson, Marcel: *See—*
Dayet, Jacques; Bastide, Pierre; and Besson, Marcel, 3,842,221.

Bethel, George Frazier. Combustion apparatus and process. 3,841,824, Cl. 431-8.000.

Bethlehem Steel Corporation: *See—*
Gingher, George C., Jr., 3,841,545.
Parker, Calvin E., Sr., 3,841,900.

Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, to U.S. Philips Corporation. High-pressure gas discharge lamp. 3,842304, Cl. 313-44.000.

Beyer, Werner: *See—*
Heitmann, Hans-Gunter; Donath, Gerhard; and Beyer, Werner, 3,841,486.

Beyleveld, Wilhelmus Maria: *See—*
Woolf, Cyril; Clifford, Bryce; and Beyleveld, Wilhelmus Maria, 3,842,127.

Bialek, Norman. Auxiliary electric drive attachment for a vehicle. 3,841,428, Cl. 180-74.000.

Biersack, Horst, "Impex-Essen" Vertrieb von Werkzeugen GmbH, Firma. Hammer Drills. 3,841,418, Cl. 173-109.000.

Bigney, Stephen W. Wheel mounted support platform hand truck. 3,841,651, Cl. 280-47.160.

Bills, Alan M., to Westvaco Corporation. Hydroxypropane sulfonates of C_{21}-cycloaliphatic acids. 3,842,119, Cl. 260-468.00k.

Biozonics Corporation: *See—*
Isaacson, Louis; and Herrin, Richard, 3,842,241.

Bird, Arthur P. Vehicle headlamp wiper assembly. 3,840,934, Cl. 15-250.300.

Bird Machine Company, Inc.: *See—*
Baker, Donald Brooks, 3,841,910.

Bird, Stephen James, to Lucas Electrical Company Limited, The. Lever operated switch having adjustable contact gap. 3,842,223, Cl. 200-61.58b.

Birk, Douglas G.: *See—*
Knaebel, Thomas C.; and Birk, Douglas G., 3,841,396.

Bisbee, Charles; Story, Albert Girard; and Servici, Cesar Juan, to Combustion Engineering, Inc. Railroad shippable boiler. 3,841,275, Cl. 122-510.000.

Bisbing, Robert H.; and Vickers, James H., to Southco, Inc. Slam-latch. 3,841,674, Cl. 292-175.000.

Bisewski, Alfons, to Ruberg & Renner GmbH. Flat link chain. 3,841,169, Cl. 74-250.00r.

Bivens, David J., to Bivens Klinchester Corporation. Drive through car wash with double pivoted spring connected side brush arrangement. 3,840,931, Cl. 15-21.00d.

Bivens Klinchester Corporation: *See—*
Bivens, David J., 3,840,931.

Bizik, Nikolai Konstantinovich: *See—*
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich, 3,841,923.

Black and Decker Manufacturing Company, The: *See—*
Pfister, Herbert R., 3,841,416.

Black Clawson Company, The: *See—*
Phelps, Richard W.; and Tetro, Richard S., 3,841,577.
Turner, C. Warren, 3,841,360.

Black, James B., to Twin Disc, Incorporated. Composite friction plate. 3,841,949, Cl. 161-42.000.

Blanchette, Robert G., to Addressograph-Multigraph Corporation. Cumulene-resin binder photoconductive elements. 3,841,871, Cl. 96-1.600.

Blaw-Know Food and Chemical Equipment, Inc.: *See—*
Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., 3,841,826.

Bley, Siegfried: *See—*
Klinkhammer, Karl; and Bley, Siegfried, 3,841,441.

Bliss, George D.: *See—*
Bennett, John P.; and Bliss, George D., 3,841,999.

Block Engineering Inc.: *See—*
Martin, James R., 3,841,920.

Block, Max; and Watson, Charles Andrew, to Lever Brothers Company. Toothpaste. 3,842,167, Cl. 424-49.000.

Blodgett, Monte R.: *See—*
Hitchiner, Joseph A.; Brown, Lawrence H.; and Blodgett, Monte R., 3,841,064.

Blodgett, Norman S.: *See—*
Wakeen, Nicholas P., 3,841,066.

Blumberg, Randolph. Pipeline anchoring systems. 3,841,106, Cl. 61-72.300.

Boari, Gianfranco, to Consiglio Nazionale Delle Ricerche. Method for removing sulfate and bicarbonate ions from sea water or brackish water through the use of weak anionic exchange resins containing amino groups of the primary and secondary type. 3,842,002 Cl. 210-32.000.

Bobbitt, Charles R. Continuity testing of solid state circuitry during temperature cycling. 3,842,346, Cl. 324-73.00r.

Bocquet, Maurice Henri; and Chatain, Michel, to Centre National d'Etuder Spatiales. Method and apparatus for continuous welding of plastics sheets, in particular for use in the manufacture of exploratory balloons. 3,841,947, Cl. 156-580.000.

Bode, Charles H., Jr., to United States Steel Corporation. Positioning mechanism for linearly slidable members. 3,841,538, Cl. 222-561.000.

Boehm, Hans-Georg: *See—*
Hundhausen, Eckhard; Cobarg, Claus Christian; and Boehm, Hans-Georg, 3,841,840.

Boehringer Mannheim GmbH: *See—*
Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,841,262.

Boeing Company: *See—*

Broadley, William D.; Grina, Kenneth I.; and Schaub, Carlton H., 3,841,586.

Boeing Company, The: *See—*
Arnold, Alison M.; Hapke, Donald W.; and Traeger, Frank J., Jr., 3,841,588.

Boese, Harold L.; and Hencey, Thomas R., Jr. Non-pollution motor units. 3,842,333, Cl. 320-2.000.

Boggs, Roger L.: *See—*
Webber, Raymond E.; Boggs, Roger L.; and Stedman, Robert N., 3,841,716.

Boggs, Wilburn A.; and Miller, Robert N., to Lockheed Aircraft Corporation. Corrosion inhibited, coated metal article. 3,841,896, Cl. 117-75.000.

Boice, G. Newton. Glazing framing method in modular wall construction. 3,841,049, Cl. 52-741.000.

Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Pneumatic tires. 3,841,372, Cl. 152-209.00r.

Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Tires. 3,841,374, Cl. 152-209.00r.

Boksjo, Carl Ingvar; deceased (by Boksjo, Stina), to Allmanna Svenska Elektriska Aktiebolaget. Static current coverter with bypass members. 3,842,335, Cl. 321-13.000.

Boksjo, Stina: *See—*
Boksjo, Carl Ingvar, 3,842,335.

Boland, Thomas M.; and White, Frank G., to Shellmaker, Inc. Method and apparatus for moving solids from a remote location. 3,841,710, Cl. 302-14.000.

Bolduc, Lee R., to Medical Plastics, Inc. Electrical connector for plate electrode. 3,842,394, Cl. 339-75.00r.

Bolex International SA: *See—*
Thevenaz, Jean A., 3,841,743.

Bolton, Anita M. Infant carrier. 3,841,543, Cl. 224-6.000.

Boltz, Chadwick C.: *See—*
Robinson, Roland L.; Boltz, Chadwick C.; Everson, Evan P.; and Mac Pherson, Douglas E., 3,841,584.

Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,841,411.

Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna. Method f production of white divitrified glass material. 3,841,856, Cl. 65-33.000.

Bonsky, Elmer C.: *See—*
Foresta, Francis A.; and Bonsky, Elmer C., 3,842,209.
Foresta, Francis A.; and Bonsky, Elmer C., 3,842,213.

Booker, Clyde A., Jr., to Westinghouse Electric Corporation. Elevator system. 3,841,443, Cl. 187-29.00r.

Booth, Robert Ben, to American Cyanamid Company. Polyelectrolyte fluidized aqueous suspensions. 3,842,013, Cl. 252-315.000.

Boots Company Limited, The: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,842,178.

Bordenca, Carl; and Dorschner, Kenneth P., to SCM Corporation. Anti-microbial diaralkylaminoalkyl ethers and process for protecting plants. 3,842,179, Cl. 424-330.000.

Borg-Warner Corporation: *See—*
Gerberich, Doanld E., 3,841,166.
Padgitt, Kenneth W.; and Wade, Donald H., 3,842,345.
Syria, Ronald L., 3,841,712.

Borgonovi, Bruno: *See—*
Heine, Gunter; and Borgonovi, Bruno, 3,842,332.

Bosch, Robert, GmbH: *See—*
Eckert, Konrad, 3,841,613.
Eheim, Franz, 3,841,286.
Friese, Karl-Hermann; Geier, Heinz; Pollner, Rudolf; and Schallert, Heino, 3,841,987.
Mattes, Bernhard; and Feigl, Erich, 3,842,317.
Muller, Rolf; and Staudt, Heinrich, 3,841,285.
Staudt, Heinrich; Hofmann, Eberhard; and Djordjevic, Ilija (said Staudt and said Hofmann assors. to), 3,841,111.
Steinmann, Helmut, 3,841,395.

Bosch, Werner: *See—*
Schedele, Helmut; and Bosch, Werner, 3,842,231.

Bosworth, George H.: *See—*
Garner, Derek H.; Bosworth, George H.; and Barker, Roger M., 3,840,929.

Botkin, Albert L. Tamper-proof closure arrangement. 3,841,512, Cl. 215-7.000.

Botteril, John Redvers: *See—*
Baum, Heinz; Camp, Eckart Op Den; Schrader, Gert; and Botteril, John Redvers, 3,841,444.

Bottoms, Harry Simister, to Joseph Lucas (Industries) Limited. Apparatus for connecting pipes to an aircraft engine. 3,841,670, Cl. 285-101.000.

Boubel, Richard W., to Rader Companies, Inc. Method and apparatus for measuring particulate emissions in gas flow. 3,841,145, Cl. 73-28.000.

Boulanger, Henry J., to Texas Instruments Incorporated. Keyboard pushbutton switch. 3,842,229, Cl. 200-159.00r.

Bouteiller, Charles A.: *See—*
Vizziello, Vito M.; and Bouteiller, Charles A., 3,841,367.

Bowerman, William R. Angularly adjustable bracket. 3,841,769, Cl. 403-90.000.

Bowers, David T.: *See—*
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., 3,841,836.

Boy, Peter: *See—*
Lucke, Heinz; Schredl, Konrad; and Boy, Peter, 3,841,113.

Boyce, Walter A.: *See—*
Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., 3,840,954.

Boyer, Ronald G.: *See—*
Babbitt, John H., Jr.; Boyer, Ronald G.; and Olt, Arthur E., Jr., 3,841,430.

Boyko, Eugene S.; Campbell, Joseph; and Wiggins, Roger J., to Westinghouse Electric Corporation. Method of sealing nuclear fuel elements by electric welding. 3,842,238, Cl. 219-137.000.

Boyle, Gerard H.; Epstein, James; and Liang, Charles C., to Mallory, P. R., & Co., Inc. Solid state battery structure. 3,841,914, Cl. 136-111.000.

Bozeman, John F. Coil tubing unit. 3,841,407, Cl. 166-315.000.

Bracco Industria Chimica, Societa per Azioni: *See—*
Felder, Ernst; and Pitre, Davide, 3,842,124.

Braden, William D.: *See—*
Appleby, Paul E.; Braden, William D.; and Vandale, Leonard A., 3,841,033.

Bradley, Wilson, Jr.: *See—*
Ast, Herbert H.; and Bradley, Wilson, Jr., 3,842,385.

Bradshaw, Darrell L., to Dole Refrigerating Company. Blower motor control circuit. 3,842,288, Cl. 307-10.00r.

Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., to Phillips Petroleum Company. Flame retardants for polymers. 3,842,033, Cl. 260-45.75b.

Brand, William W.; and Bullock, Milon Walker, to American Cyanamid Company. Process for preparing 2-imino-1,3-dithietanes. 3,842,096, Cl. 260-327.00m.

Brandquist, Rune Lennart, to U.S. Philips Corporation. Generator for producing ultrasonicoscillations. 3,842,340, Cl. 321-45.00r.

Brandt, Siegfried: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,842,046.

Brannland, Rolf Carl August; Hultman, Bengt Goran; and Hubert, Bertil Valdemar, to Mo Och Domsjo Aktiebolag. Process for reducing emission of hydrogen sulfide when washing sulfur-dioxide-containing waste gases obtained from the burning of cellulose waste liquor. 3,842,160, Cl. 423-242.000.

Bratkowski, Walter V.: *See—*
Shoupp, William E.; and Bratkowski, Walter V., 3,842,427.

Braun, Hermann E.: *See—*
Supel, Ignacy; and Braun, Hermann E., 3,842,328.

Braun, Martin, to Machlett Laboratories Incorporated, The. X-ray tube anode target. 3,842,305, Cl. 313-60.000.

Bray Oil Company: *See—*
Pratt, Robert E., 3,842,134.

Brenner, Martin; and Loev, Bernard, to Smithkline Corporation. Pharmaceutical compositions and methods of inhibiting gastric acid secretion. 3,842,173, Cl. 424-263.000.

Briddell, Charles D.; and Thompson, John W. Oyster braker. 3,840,940, Cl. 17-74.000.

Bridgestone Tire Company Limited: *See—*
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.

Bridwell, Harold C.: *See—*
Wilder, Arthur G.; and Bridwell, Harold C., 3,841,852.

Briggs & Stratton Corporation: *See—*
Harkness, Joseph R., 3,841,425.

Brinegar, Willard C., to Celanese Corporation. Production of semipermeable polybenzimidazole membranes. 3,841,492, Cl. 210-500.000.

Bristow, Norman William: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,842,178.

Bristowe, William W.: *See—*
Restaino, Alfred J.; and Bristowe, William W., 3,841,401.

British Gas Corporation: *See—*
Templeman, John Joseph, 3,841,058.

British Insulated Callerder's Cabes Limited: *See—*
Raw, Peter Michael; and Llewellyn, Rees Jenkin, 3,842,185.

British Non-Ferrous Metals Research Association, The: *See—*
Jones, Rodney Charles; and Hershman, Alan Abraham, 3,841,847.

British Petroleum Company, Limited, The: *See—*
Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy, 3,842,014.

British Steel Corporation: *See—*
Davies, Emrys; and Rippon, John Roy, 3,841,867.

British-American Tobacco Company Limited: *See—*
Horsewell, Henry George; and Luke, John Anthony, 3,841,338.

Britz, Stanley M.: *See—*
Scicchitano, Patsy A.; Malarbi, Anthony, Jr.; Britz, Stanley M.; and McCarthy, James R., 3,841,046.

Broad, Bernard Henry, to English Clays Lovering Pochin & Company Limited. Streamlined flow in fluids. 3,841,568, Cl. 239-590.000.

Broadley, William D.; Grina, Kenneth I.; and Schaub, Carlton H., to Boeing Company. Rotor swashplate assembly. 3,841,586, Cl. 244-17.250.

Brock, Thomas W.: *See—*

Planchock, Jerry L.; Stewart, Daniel R.; and Brock, Thomas W., 3,841,950.

Broderick & Bascom Rope Company: *See*—
Wheeler, Claud R.; and Freebourn, Norbert E., 3,841,235.

Brog, Larry R. Cheese processing. 3,841,210, Cl. 99-456.000.

Brookman, Paul: *See*—
Fowler, William Douglas; and Brookman, Paul, 3,841,558.

Broussaud, Georges; and Spitz, Erich, to Thomson-CSF. Flexible holographic reproducing system record disc. 3,842,197, Cl. 178-6.70a.

Brown, David, Tractors Limited: *See*—
Eastwood, Thomas, 3,841,455.

Brown, Frank H., to Automecha, Ltd. Apparatus for folding long webs or sheets of material. 3,841,621, Cl. 270-61.00f.

Brown, James T., Jr. Kinesitherapy appliance. 3,841,320, Cl. 128-33.000.

Brown, Lawrence H.: *See*—
Hitchiner, Joseph A.; Brown, Lawrence H.; and Blodgett, Monte R., 3,841,064.

Brown, Martin M.; and Krawczak, Lawrence, to Robin Products. Resilient buffer assembly. 3,841,044, Cl. 52-716.000.

Brown, Richard L. Apparatus for pneumatically securing backing to sheet material ancillary to folding or other operational treatment. 3,840,961, Cl. 29-200.00j.

Brown, Robert A.: *See*—
Jepson, John W.; Lyon, Herbert W.; and Brown, Robert A., 3,841,199.

Brown, Robert S., II. Shave tool holder. 3,841,179, Cl. 82-35.000.

Brown, Ronald W. Dental pulp tester. 3,841,311, Cl. 128-2.10r.

Brown, William M., to Ultra Products, Inc. Reuseable step and proch form. 3,841,595, Cl. 249-14.000.

Browne, Anthony Arthur Briarly; and McIntyre, James Eric, to Imperial Chemical Industries Limited. Manufacture of polyesters. 3,842,040, Cl. 260-75.00m.

Browne, Anthony Arthur Briarly; and McIntyre, James Eric, to Imperial Chemical Industries Limited. Solid state manufacture of polyesters. 3,842,041, Cl. 260-75.00m.

Bruce, Glenister Stuart, to Ricardo & Co. Engineers (1927) Limited. Reciprocating-piston engines and compressors. 3,841,203, Cl. 92-73.000.

Brumlik, George C. Gripping fastening surface and method of making same. 3,840,945, Cl. 24-204.000.

Bruning, John Henry, to Bell Telephone Laboratories, Incorporated. High voltage amplifier. 3,842,259, Cl. 250-213.00a.

Bryant, Gerald T.; and Mayfield, James L., to Airco, Inc. Flame arresting vent valve. 3,841,520, Cl. 220-88.00a.

Bucalo, Louis, to Shods, Inc. Horseshoes. 3,841,408, Cl. 168-7.000.

Bucalo, Louis, to Microbyx Corporation. Method and device for testing for the presence of micro-organisms. 3,842,166, Cl. 424-9.000.

Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, to Farbenfabriken Bayer Aktiengesellschaft. Diphenylimidazolyl-acetic acid morpholide. 3,842,078, Cl. 260-247.500.

Buchel, Karl-Heinz: *See*—
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,175.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,176.

Budd Company, The: *See*—
Norton, Roy C., Jr., 3,841,448.

Buendia, Jean: *See*—
Martel, Jacques; and Buendia, Jean, 3,842,177.

Buggeln, Richard C.: *See*—
Dobrzelecki, Arthur J.; and Buggeln, Richard C., 3,842,363.

Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Injectors for injecting a liquid, in particula a fuel, into a high temperature space such as a combustion chamber. 3,841,565, Cl. 239-488.000.

Bullard, Calvin Penfield, to Armflex, Inc. Work transfer apparatus. 3,841,499, Cl. 214-1.0bd.

Bullock, Milon Walker: *See*—
Brand, William W.; and Bullock, Milon Walker, 3,842,096.

Bunger, David A., to Baldwin, D. H., Company. Arpeggio system. 3,842,182, Cl. 84-1.030.

Bunger, Richard E. Livestock watering trough. 3,841,268, Cl. 119-73.000.

Bunger, Richard E. Apron laying device for livestock feeding troughs. 3,841,778, Cl. 404-105.000.

Bunn, Dorrance P., Jr.: *See*—
Williams, Dale; and Bunn, Dorrance P., Jr., 3,841,843.

Bunnell, Edward Dennman: *See*—
Aldridge, Lionel Dennis; and Bunnell, Edward Dennman, 3,842,392.

Burbidge, George W., to Reystone Consolidated Industries, Inc. Gabion connector. 3,840,947, Cl. 24-261.0wl.

Burg-Mobel Dieter Ruddies: *See*—
Metz, Werner, 3,841,052.

Burk, David L., to Allegheny Ludlum Industries, Inc. Method and apparatus for teeming stream protection. 3,841,385, Cl. 164-66.000.

Burness, Donald M.; and Silverman, Robert A., to Eastman Kodak Company. Hydrophilic-colloid silver halide emulsion hardened with a bisvinylsulfonyl compound. 3,841,872, Cl. 96-67.000.

Burnett, David B.; and Alston, Robert B., to Texaco Inc. Miscible flood process for oil recovery using a lean gas. 3,841,403, Cl. 166-274.000.

Burnett, David B., to Texaco Inc. Single well oil recovery method using carbon dioxide. 3,841,406, Cl. 166-305.00r.

Burns, Cameron A. Engine with radially reciprocal rotor mounted pistons. 3,841,279, Cl. 123-43.00c.

Burr, Harley W., to Motus Chemical, Inc. Refractory cement incorporating fluxing component. 3,841,886, Cl. 106-109.000.

Burroughs Corporation: *See*—
Stocker, Herman Walter, 3,842,326.

Burt, William E., to Ethyl Corporation. Thermoplastic filter media and filtering process. 3,842,006, Cl. 210-65.000.

Busch, Hansjochen: *See*—
Lenk, Erich; Busch, Hansjochen; and Greb, Manfred, 3,841,574.

Buschmann, Hans; Mehlhart, Erwin; Schwibbe, Valfred; and Pomplun, Emil, to Nixdorf Computer AG. Movable carriage assembly and ink ribbon control. 3,841,459, Cl. 197-161.000.

Buss AG: *See*—
Ronner, Fritz, 3,841,611.

Butts, Ernest O.; and Hall, John S., to Hambro Structural Systems Limited. Floor form with connected truss supports. 3,841,597, Cl. 249-30.000.

Byer, Joseph I. Mobile housing unit. 3,841,691, Cl. 296-23.00c.

C & C Products, Inc., mesne: *See*—
Carlson, Franklin J., 3,840,938.

C. Reichert Optische Werke AG: *See*—
Sitte, Hellmuth, 3,841,190.

C&D Valve Manufacturing Company, a joint Venture: *See*—
Olson, John W., 3,840,967.

Calabrese, Salvadore Joseph, to Du Pont de Nemours, E. I., and Company. Wear resistant frictionally contacting surfaces. 3,841,724, Cl. 308-241.000.

Caldwell, Carroll E.; and Ficklin, Ann C., to United States of America, Atomic Energy Commission. Purification of platinum. 3,841,863, Cl. 75-83.000.

Caldwell, Sherwood M.: *See*—
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., 3,841,836.

California Cement Shake Co., Inc.: *See*—
Jakel, Gus R., 3,841,885.

California Institute of Technology: *See*—
Yariv, Ammon; and Somekh, Sasson R., 3,842,289.

Callihan, Rudy B.; and Wainwright, Clyde S., Jr., to Baker Oil Tools, Inc. Selective hydrostatically set parallel string packer. 3,841,400, Cl. 166-120.000.

Callins, Harold T.; and Doster, William H., to Whitehall Electronics Corporation. Fused cathode electrolytic capacitors. 3,842,325, Cl. 317-230.000.

Camp, Eckart Op Den: *See*—
Baum, Heinz; Camp, Eckart Op Den; Schrader, Gert; and Botteril, John Redvers, 3,841,444.

Campbell, Joseph: *See*—
Boyko, Eugene S.; Campbell, Joseph; and Wiggins, Roger J., 3,842,238.

Campbell, Robert W., to Phillips Petroleum Company. Amorphous polyamides from bist 4-aminocyclohexyl) methane and a mixture of straight chain dicarboxylic acids. 3,842,045, Cl. 260-78.00r.

Canadian Patents and Development Limited: *See*—
Cox, Louis G.; Kusters, Norbert L.; and MacMartin, Malcolm P., 3,842,349.

Cann, Lyle L., to Chemetron Corporation. Chiller apparatus. 3,841,109, Cl. 62-266.000.

Cannon, Glyn E. Method and apparatus for anchoring underwater pipelines. 3,841,105, Cl. 61-72.300.

Canon Kabushiki Kaisha: *See*—
Tsunekawa, Tokuichi; Nakamoto, Soichi; and Hasegawa, Goro, 3,842,424.

Caplan, Harry W. Curved paper panel reflective structure. 3,841,738, Cl. 350-293.000.

Capot, Lucien, to Subsea Equipment Associates Limited (SEAL). System for connection of two immersed conduits. 3,841,665, Cl. 285-2.000.

Cappel, Marie-Luise: *See*—
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,840,946.

Caputi, Arthur, Jr.; and Wong, Thomas C., to E. & J. Winery. Fibrous cellulose acetate filter material. 3,842,007, Cl. 210-65.000.

Carborundum Company, The: *See*—
Lawler, Harry A., 3,841,954.

Carlson, Franklin J., to C & C Products, Inc., mesne. Poultry picking machines. 3,840,938, Cl. 17-11.10r.

Carlson, Reuben T.: *See*—
Albach, Robert W.; Mathers, Kenneth R.; and Carlson, Reuben T., 3,841,321.

Carlson, Robert G.; and Steinhagen, Carl A., to General Electric Company. Apparatus for forming a composite metallic preform tape. 3,841,942, Cl. 156-436.000.

Carlyon, Richard A., Jr. Display apparatus for potted plants. 3,841,023, Cl. 47-38.000.

Carman, Warner T., to Mobil Oil Corporation. Grease compositions. 3,842,008, Cl. 252-18.000.

Carpenter Technology Corporation: *See*—
Hamjian, Harry J., 3,841,870.

Carricato, Guy V., to Miller Printing Machinery Co. Method and apparatus for delivering sheets. 3,841,625, Cl. 271-182.000.

Carroll, Albert; and Beall, Glen L., to Schmid Laboratories, Inc., mesne. Spray dispenser and shield. 3,841,533, Cl. 222-402.130.

Carter, Cecil O.: *See—*
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,842,140.
Carter, Russell W., to Corn States Metal Fabricators, Inc. Method for forming a tire. 3,842,150, Cl. 264-102.000.
Carter, Sidney T., to A-T-O Inc. Helical feed screws for container processing machinery. 3,841,946, Cl. 156-566.000.
Case, J. I., Company: *See—*
Schlapmann, William J.; and Manteufel, Dale, 3,841,447.
Case, John S. Rotary device. 3,841,276, Cl. 123-8.470.
Casio Computer Co., Ltd.: *See—*
Kashio, Yukio; and Ishii, Hiroshi, 3,842,230.
Casner, John W.; Transue, James A.; and Skiba, John, to Singer Company, The. One step buttonhole operating and indicating devices. 3,841,246, Cl. 112-177.000.
Catanese, Peter J.: *See—*
Harendza-Harinxma, Alfred Joseph, 3,842,070.
Caterpillar Tractor Co.: *See—*
Babbitt, John H., Jr.; Boyer, Ronald G.; and Olt, Arthur E., Jr., 3,841,430.
Purcell, Robert J.; and Wehr, Kenneth E., 3,841,424.
Shankwitz, Robert F.; and Garman, Anthony L., 3,841,771.
Caterpillar Tractor Company: *See—*
Cobb, Raymond P., 3,841,094.
Comer, Glen S., Jr.; and Sitton, Ellis A., 3,841,715.
Cryder, John R., 3,841,345.
Ferre, Glenn E.; Franz, Maurice F.; Lohbauer, Kenneth R.; and McMillan, William D., 3,841,795.
Howarth, Richard C.; and Wilson, Eugene M., 3,841,007.
Reinsma, Harold L., 3,841,718.
Russey, James W., 3,841,431.
Schmitt, James L.; and Ohaver, David S., 3,841,608.
Webber, Raymond E.; Boggs, Roger L.; and Stedman, Robert N., 3,841,716.
Caton, George, to Yorkshire Switchgear and Engineering Co. Limited. Electrical switchgear with primary and secondary switch means associated with current transformer. 3,842,321, Cl. 317-103.000.
Cebal: *See—*
Vandrebeck, Roger, 3,841,056.
Celanese Corporation: *See—*
Brinegar, Willard C., 3,841,492.
Ram, Michael J.; and Riggs, John P., 3,841,079.
Centre National d'Etuder Spatiales: *See—*
Bocquet, Maurice Henri; and Chatain, Michel, 3,841,947.
Centre Technique Industriel dit: Institut Textile de France: *See—*
Neveu, Jean-Louis, 3,840,941.
Century-Niagara Corporation: *See—*
Klein, Lawrence N.; and Wallens, William R., 3,841,116.
Ceskoslovenska akademie ved: *See—*
Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, 3,842,151.
Chahvekilian, Edgar; and Plichon, Jean Marc, to Pierrefitte-Auby. Method of cracking hydrocarbons under hydrogen pressure for the production of olefins. 3,842,138, Cl. 260-683.00r.
Chalupsky, Paul A.; and Nephew, Oliver T., to FMC Corporation. Sequenced crane boom. 3,841,494, Cl. 212-55.000.
Chamberlain, Albert B., to Atlanta Stove Works, Inc. Heat exchanger for wall furnace. 3,841,301, Cl. 126-110.00r.
Chance, A. B., Company: *See—*
Grannis, Charles O., III, 3,841,032.
Chance, Ronald E.; and Jones, William E., to Lilly, Eli, and Company. Polypeptides from bovine, ovine, human and porcine pancreas. 3,842,063, Cl. 260-112.500.
Chaney, Preston E.: *See—*
Bennett, John D.; and Chaney, Preston E., 3,841,252.
Chang, Yun Ger; and Bailey, Philip S., to Reichhold Chemicals, Inc. Organic peroxides. 3,842,129, Cl. 260-594.000.
Chapin, Peter L.: *See—*
Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 3,841,744.
Character Novelty Company, Inc.: *See—*
Georgen, Robert T.; and Dolgen, Igor E., 3,840,974.
Chase, Arthur B.: *See—*
Chase, Arthur B.; and Miller, Paul C., 3,841,746.
Chase, Arthur B.; and Miller, Paul C., 75% to Chase, Arthur B. and 25% to Miller, Paul C. Control for synchronizing projectors with an audio program. 3,841,746, Cl. 353-15.000.
Chatain, Michel: *See—*
Bocquet, Maurice Henri; and Chatain, Michel, 3,841,947.
Chemetron Corporation: *See—*
Cann, Lyle L., 3,841,109.
Chemiebau Dr. A. Zieren GmbH u. Co. KG: *See—*
Neumann, Ulrich, 3,842,157.
Chemische Werke Huls, A.G.: *See—*
Schluter, Herbert, 3,842,025.
Chen, Nai Yuen; Leavitt, Richard I.; and Coty, Vernon F., to Mobil Oil Corporation. Control of foam during growth of a microorganism. 3,841,972, Cl. 195-107.000.
Chen, Tien Chi; and Ho, Irving Tze, to International Business Machines Corporation. Binary coded decimal conversion apparatus. 3,842,414, Cl. 340-347.0dd.
Chenebault, Pierre; and Pointud, Marie-Louise, to Commissariat a l'Energie Atomique. Method for determining the proportion of broken particles in the fuel compacts employed in high temperature reactors. 3,842,283, Cl. 250-492.000.
Cheng, Albert Shu Lok, to Chiap-Hua Comalco Limited. Sliding window. 3,841,024, Cl. 49-130.000.
Chervenak, Michael C.: *See—*
Wolk, Ronald H.; and Chervenak, Michael C., 3,842,122.
Chiang, Mutong I.: *See—*
Milkovich, Ralph; and Chiang, Mutong I., 3,842,146.
Chiang, Mutong T.: *See—*
Milkovich, Ralph; and Chiang, Mutong T., 3,842,050.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,057.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,058.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,059.
Chiang, Yuen-Shenk, to RCA Corporation. Method of making a metal silicide-silicon schottky barrier. 3,841,904, Cl. 117-200.000.
Chiap-Hua Comalco Limited: *See—*
Cheng, Albert Shu Lok, 3,841,024.
Chibata, Ichiro; Kosumi, Masahiko; Komatsubara, Saburo; and Sugiura, Masaki, to Tanabe Suaku Co., Ltd. Fermentative preparation of L-isoleucine. 3,841,968, Cl. 195-29.000.
Chicago Bridge & Iron Company: *See—*
Kircik, Willis James; Rothrock, Elmer Weyman; and Johnson, Paul Richard, 3,841,253.
Chicago Metallic Corporation: *See—*
Jahn, Reinhardt H., 3,841,048.
Chicago Musical Instrument Co.: *See—*
Kniepkamp, Alberto E.; and Wangard, William, 3,842,184.
Chicago Rawhide Manufacturing Company: *See—*
Tucker, Alfred J., 3,841,809.
Chichester, Willard L.: *See—*
Holtkamp, Donald A.; and Chichester, Willard L., 3,841,423.
Childs, Willard D., to Rucker Company, The. Lock bar mechanism. 3,841,770, Cl. 403-106.000.
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Kawashima, Masao, to Mitsubishi Rayon Company Limited. Process for preparing polyesters in the presence of an improved polycondensation catalyst. 3,842,043, Cl. 260-75.00r.
Chisholm, Douglas S., to Dow Chemical Company, The. Apparatus for heating capsule forming pins. 3,842,242, Cl. 219-385.000.
Chisso Corporation: *See—*
Torigoe, Masataka; Nakano, Kazuaki; and Aruga, Shiro, 3,842,056.
Chisum, Finis Lavell. Apparatus for transporting one vehicle by another. 3,841,509, Cl. 214-506.000.
Chow, Sui-Wu; and Matzner, Markus, to Union Carbide Corporation. B-staged polyurethane-isocyanurates from alkylene oxide condensate of novolak resins. 3,842,036, Cl. 260-47.0cb.
Christensen Diamond Products Company: *See—*
Wilder, Arthur G.; and Bridwell, Harold C., 3,841,852.
Christensen, Jeffrey P.; and Helsene, Larry E., to Hormel, Geo. A., & Co. Safety device for bacon press. 3,842,260, Cl. 250-221.000.
Chrysler Corporation: *See—*
Anagnostou, Taki J.; Dixon, Norman B.; and Sastry, Gundu M., 3,842,023.
Chuang, Vincent T.: *See—*
Omietanski, George M.; and Chuang, Vincent T., 3,842,112.
Chubachi, Susumu: *See—*
Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, 3,842,144.
Church, Herman S.; Hagener, James L.; and Scifres, Zach M., III, to Teledyne Mid-America Corporation. Vehicle bumper rub strip construction. 3,841,682, Cl. 293-71.00r.
Chvertko, Antoly Ivanovich: *See—*
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich, 3,841,923.
Ciba-Geigy AG: *See—*
Hindermann, Peter; and Meindl, Hubert, 3,842,102.
Ciba-Geigy Corporation: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,842,074.
Heusler, Karl; and Woodward, Robert Burns, 3,842,072.
Winter, Roland A. E., 3,842,143.
Cicci, George B.: *See—*
Scarnato, Thomas J.; Cicci, George B.; and Meyer, Martin H., 3,841,070.
Cities Service Oil Company: *See—*
Russell, Kenneth L., 3,841,419.
Clad Metals Corporation: *See—*
El Bindari, Ahmed, 3,840,972.
Clark, Arthur C., to United States of America, Navy. Magnetic refrigeration. 3,841,107, Cl. 62-3.000.
Clark, Bob R. Pick-up truck rail assembly and tie-down device. 3,841,660, Cl. 280-179.00r.
Clark Equipment Company: *See—*
Erickson, Dennis E.; and Harrington, Harry L., 3,841,442.
Holtkamp, Donald A.; and Chichester, Willard L., 3,841,423.
Clark, Herbert, to LTV Aerospace Corporation. Fuel reclaiming system. 3,841,089, Cl. 60-39.090.
Clark, Larry G. Portable window-service counter unit. 3,841,037, Cl. 52-36.000.
Clark, Raymond: *See—*
Reynolds, Roy; and Clark, Raymond, 3,841,693.
Claspy, Paul C.: *See—*
Pao, Yoh-Han; and Claspy, Paul C., 3,842,372.
Clauer, Egon F.: *See—*

Gray, Byron Everett; and Clauer, Egon F., 3,841,004.
Clayton Specialties, Inc.: *See—*
Scott, Donald C., deceased, 3,841,469.
Cleary, James W., to Phillips Petroleum Company. Process for producing sultone- or hydroxyalkanesulfonate-modified polyamides. 3,842,044, Cl. 260-78.00r.
Clemens, John Kaufmann, to RCA Corporation. Record fabrication of a capacitive type storage medium. 3,842,217, Cl. 179-100.40c.
Clemens, Jon Kaufmann, to RCA Corporation. Information records and recording/playback systems therefor. 3,842,194, Cl. 178-6.60a.
Clemens, William J., to Ford Motor Company. Energy absorber having extension jack. 3,841,678, Cl. 293-1.000.
Clements, Richard F.: *See—*
Dewey, Ernest A.; and Clements, Richard F., 3,841,241.
Clifford, Bryce: *See—*
Woolf, Cyril; Clifford, Bryce; and Beyleveld, Wilhelmus Maria, 3,842,127.
Clipp, Louis L.: *See—*
Hall, James Michael; and Clipp, Louis L., 3,841,559.
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., to Monsanto Company. Plasticizer systems for polyvinyl butyral interlayer. 3,841,890, Cl. 106-316.000.
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., to Monsanto Company. Plasticized polyvinyl butyral interlayers. 3,841,955, Cl. 161-199.000.
Coale, Edgar B., to Levy, Max, & Co., Inc. Combination of a transmissive diffractive phase-grating and a television picture-tube in operative juxtaposition to each other. 3,842,202, Cl. 178-7.850.
Coates, Vincent John; Welter, Leonard M.; and Gold, James J., to American Optical Corporation. Scanning charged particle microprobe with external spurious electric field effect correction. 3,842,272, Cl. 250-311.000.
Cobarg, Claus Christian: *See—*
Hundhausen, Eckhard; Cobarg, Claus Christian; and Boehm, Hans-Georg, 3,841,840.
Cobb, Raymond P., to Caterpillar Tractor Company. Flexible band bearing for torque converter element. 3,841,094, Cl. 60-339.000.
Cockman, Arthur G.: *See—*
Pinkham, Jesse R.; Cockman, Arthur G.; and Joyce, Jerry Ray, 3,841,071.
Coffey, James M.; and Lang, Clifford H., to Cybergenics Inc. Clutch with vacuum release motor. 3,841,449, Cl. 192-3.590.
Cohen, Marvin P.: *See—*
Von Strandtmann, Max; Cohen, Marvin P.; and Shavel, John Jr., 3,842,085.
Cohen, Saul J.; and Hochman, Jack M., to Esso Research and Engineering Company. Coal conversion process. 3,841,991, Cl. 208-8.000.
Coil, Michael K.; and Eder, Thomas W., to Eastman Kodak Company. Method and apparatus for determining the inherent viscosity of a liquid. 3,841,147, Cl. 73-56.000.
Cole Manufacturing Company: *See—*
Hatcher, John C., 3,841,522.
Hatcher, John C., 3,841,529.
Colgate-Palmolive Company: *See—*
Colodney, Daniel, 3,842,168.
Coller, James Ray, to AMP Incorporated. Mechanical analogue computer in a wiring machine. 3,840,962, Cl. 29-203.00b.
Collette, Ricahrd L., to Guardian Electric Manufacturing Company. Electrically held three position cutout switch. 3,842,375, Cl. 335-164.000.
Collier, John Richard; and Porter, Alan Sidney, to Albright & Wilson Limited. Chroman-3-ols. 3,842,093, Cl. 260-345.200.
Collins Radio Company: *See—*
Frazier, Melvin A., 3,842,358.
Colodney, Daniel, to Colgate-Palmolive Company. Method of preparing stable dentifrice. 3,842,168, Cl. 424-52.000.
Colonna, Vincenzo: *See—*
Bernardi, Luigi; De Castiglione, Roberto; and Colonna, Vincenzo, 3,842,123.
Colorado Ski Area Equipment Company: *See—*
Meyer, Charles M., 3,841,648.
Combest, John F.; and Kuss, Ralph L., to Kuss, R. L., and Co., Inc. Fluid filter. 3,841,489, Cl. 210-223.000.
Combustion Engineering, Inc.: *See—*
Bisbee, Charles; Story, Albert Girard; and Servici, Cesar Juan, 3,841,275.
Groves, Malcolm D., 3,841,202.
Comer, Glen S., Jr.; and Sitton, Ellis A., to Caterpillar Tractor Company. Idler mounting mechanism and track adjuster. 3,841,715, Cl. 305-10.000.
Commercial Shearing, Inc.: *See—*
Gray, Basil P., 3,841,939.
Commissariat A L Energie Atomique: *See—*
Edeline, Jean-Claude; and Lavergne, Justin, 3,842,285.
Commissariat a l'Energie Atomique: *See—*
Chenebault, Pierre; and Pointud, Marie-Louise, 3,842,283.
Commissasiat a l'Energie Atomique: *See—*
Dumayne, Raymond, 3,841,964.
Compagnie Generale d'Electricite: *See—*
Debart, Hubert, 3,841,755.
Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Boileau, Jacques, 3,841,372.
Boileau, Jacques, 3,841,374.
Montagne, Jean Bernard, 3,841,377.
Compagnie Industrielle des Telecommunications: *See—*
Lagarde, Jean-Louis, 3,842,413.
Computer Industries, Inc.: *See—*
Towell, Leroy Dean, 3,842,190.
Comtec Economation: *See—*
Ozimec, Stephen, 3,841,546.
Comtois, Alfred Louis. Method and apparatus for modifying lock keys. 3,841,175, Cl. 76-110.000.
Conner, Jessee R.; and Polosky, Ronald J., to Environmental Sciences, Inc. Method of improving the quality of leachate from sanitary landfills. 3,841,102, Cl. 61-35.000.
Consiglio Nazionale Delle Ricerche: *See—*
Boari, Gianfranco, 3,842,002.
Consolidated Medical Equipment Inc.: *See—*
Corasanti, Eugene, 3,841,312.
Continental Can Company, Inc.: *See—*
Szatkowski, Richard R., 3,841,479.
Continental Oil Company: *See—*
Gregory, M. Duane; Stolhand, James E.; and Yost, Marvin E., 3,842,270.
Harmon, Richard A., 3,841,404.
Mehdizadeh, Parviz, 3,841,137.
Coolidge, Richard M.: *See—*
Williams, Robert G.; and Coolidge, Richard M., 3,841,388.
Coombs, Robert V.: *See—*
Bacso, Imre; and Coombs, Robert V., 3,842,104.
Cooper, Bryan Ewart: *See—*
Owen, William J.; and Cooper, Bryan Ewart, 3,842,153.
Cooper, Cleveland N., to Pandjiris Weldment Co., The. Self-centering chuck mechanism. 3,841,647, Cl. 279-110.000.
Cooper, Raymond Edward, to Liberty Industries, Inc. Exhaust gas treatment system. 3,841,828, Cl. 432-222.000.
Corasanti, Eugene, to Consolidated Medical Equipment Inc. Electrode arrangement. 3,841,312, Cl. 128-2.06e.
Cordoba, Gines Gascon. Device for breaking up compressed material packed in a sack. 3,841,572, Cl. 241-202.000.
Corn States Metal Fabricators, Inc.: *See—*
Carter, Russell W., 3,842,150.
Cornelissen, Gerardus Antonius Petrus Maria: *See—*
Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, 3,842,304.
Cornell, Edward P., to General Electric Company. Drive system for automatic meter reader. 3,842,268, Cl. 250-231.0se.
Cornford, Arthur Selwyn. Gear cutting machine with means for continuously controlling the position of the tool in accordance with the position of the carriage. 3,841,198, Cl. 90-4.000.
Corning Glass Works: *See—*
Armistead, William H.; Elmer, Thomas H.; and Lichtenstein, Ivan E., 3,842,017.
Messing, Ralph A., 3,841,971.
Wiley, Robert F., 3,841,839.
Wiley, Robert F., 3,841,842.
Corrigan, Leo A.; and Spears, Esten W., Jr., to General Motors Corporation. Variable diffuser. 3,841,789, Cl. 415-148.000.
Cosgrove, James F.; and Soong, William E., to McCain Mfg. Corporation. Book trimming machine. 3,841,182, Cl. 83-89.000.
Cote, Walter E., to United States of America, Air Force. Communications system having single RF channel diversity means. 3,842,352, Cl. 325-56.000.
Cotton, Incorporated: *See—*
Swidler, Ronald; and Wilson, Katherine W., 3,841,832.
Coty, Vernon F.: *See—*
Chen, Nai Yuen; Leavitt, Richard I.; and Coty, Vernon F., 3,841,972.
Coutant, Ralph W.; and Schlueter, Frederick, to Litton Systems Inc. Bearing cartridge assembly. 3,841,721, Cl. 308-20.000.
Cox, Ivan E. Metatarsal pad mounting for weight distributing shoe shank. 3,841,005, Cl. 36-76.00c.
Cox, Louis G.; Kusters, Norbert L.; and MacMartin, Malcolm P., to Canadian Patents and Development Limited. Automatic AC/DC RMS comparator. 3,842,349, Cl. 324-98.000.
CPC International Inc.: *See—*
Milkovich, Ralph; and Chiang, Mutong T., 3,842,050.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,057.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,058.
Milkovich, Ralph; and Chiang, Mutong T., 3,842,059.
Milkovich, Ralph; and Chiang, Mutong I., 3,842,146.
Miller, James E., 3,841,831.
Crafford, John W.: *See—*
Crafford, Thomas J.; and Crafford, John W., 3,841,088.
Crafford, Thomas J.; and Crafford, John W., to Crafford Tool & Die Co. Apparatus for forming wire links. 3,841,088, Cl. 59-16.000.
Crafford Tool & Die Co.: *See—*
Crafford, Thomas J.; and Crafford, John W., 3,841,088.
Craig, John M., to Rockwell International Corporation. Solid propellant containing stronium carbonate-calcium citrote burning rate depressant. 3,841,929, Cl. 149-17.000.
Craig, Loren J.; and Hochreiter, William T., to Eastman Kodak Company. Exposure control apparatus. 3,842,423, Cl. 354-29.000.
Crane, Jacob: *See—*
Shapiro, Eugene; and Crane, Jacob, 3,841,921.
Crane Packaging Company: *See—*

Katzke, Ernest F., 3,841,028.
Crawford, Lawrence G., Jr. Plate boring device. 3,841,417, Cl. 173-31.000.
Crayton, John W.: *See—*
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,840,979.
Creusot-Loire: *See—*
Delaire, Georges, 3,841,615.
Criswell, Homer C. Curtain wall gasket system. 3,841,045, Cl. 52-395.000.
Crivilles, Jose Maria Roger. Front loading washing and drying machine. 3,841,117, Cl. 68-20.000.
Croan, Kenneth F. Method of recovering honey from artificial honeycombs. 3,840,925, Cl. 6-2.00r.
Crook, Keith Jeremy, to International Computers Limited. Data display. 3,842,404, Cl. 340-172.500.
Cross, Newbold O.; and Thompson, Jeffrey L., to Esso Research and Engineering Company. Automated volume monitoring system. 3,841,146, Cl. 73-49.200.
Crow, Morgan LeVon, to Dresser Industries, Inc. Synamic rock bit lubrication system. 3,841,422, Cl. 175-229.000.
Crown Controls Corporation: *See—*
Stammen, Harold A., 3,841,698.
Crutsch, Louis; and Ducassou, Bernard. Mechanism for the operation of railroad track switches. 3,842,256, Cl. 246-258.000.
Cruz, Luxmi S. Body shirt for men. 3,840,900, Cl. 2-77.000.
Cryder, John R., to Caterpillar Tractor Company. Pilot operated control valve. 3,841,345, Cl. 137-106.000.
Cuevas, John W.; and Jones, Harley W. Binary clock. 3,841,082, Cl. 58-50.00r.
Cughey, John W. Portable step stool. 3,841,437, Cl. 182-16.000.
Culbertson, George W., to FMC Corporation. Friction couplings with spring cushioned operators. 3,841,453, Cl. 192-109.00a.
Cull, Alan Sidney. Concrete shaft forming unit. 3,841,596, Cl. 249-20.000.
Culpepper, Clifford, Jr., to Aero-Dyne. Noise attenuator. 3,841,434, Cl. 181-36.00r.
Cummins-Allison Corp.: *See—*
Schneiderhan, Edward M., 3,842,245.
Cuniberti, Mario, to Owens-Illinois, Inc. Motion translating apparatus and controls therefor. 3,841,497, Cl. 214-1.0bt.
Curators of the University of Missouri, The: *See—*
Hansen, David A., 3,841,467.
Curley, William J., to Packaging Corporation of America. Shipping container and blank therefor. 3,841,548, Cl. 229-40.000.
Currer, John T.: *See—*
Kielman, Ervin J.; and Currer, John T., 3,840,981.
Cushing, Donald S.; and Jenkins, Thomas E., to General Electric Company. Dishwasher and spray system therefor. 3,841,342, Cl. 134-144.000.
Custick, William L., to Mar-Wil Enterprises Ltd. Stretcher frame. 3,841,008, Cl. 38-102.910.
Cybergenics Inc.: *See—*
Coffey, James M.; and Lang, Clifford H., 3,841,449.
Cywinski, Norbert Francis: *See—*
Lo, Ching-Tsan; Miller, Joe Jed; and Cywinski, Norbert Francis, 3,842,132.
Dale Products, Inc.: *See—*
Simonton, Robert D.; Schultz, Carl D.; and Stiger, Clyde W., 3,841,672.
Dalibor, Horst; Gutte, Richard; and Stenzel, Gunter, to Reichhold-Albert-Chemie Aktiengesellschaft. Method for making a polymeric fusion adhesive practically free of organic solvents and which is meltable and soluble in organic solvents. 3,842,133, Cl. 26080.730.
Damico, Frank M., to Joerns Furniture Company. Control mechanism for electrically operable bed. 3,840,910, Cl. 5-66.000.
Danfoss A/S: *See—*
Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, 3,841,800.
Petersen, Poul, 3,842,188.
Sturlason, Leif Viggo; and Ohrberg, Carl Verner, 3,841,801.
Daniel, Roger P., to Ford Motor Company. Test dummy submarining indicator system. 3,841,163, Cl. 73-432.0sd.
Daniels, Donald H., 50% to Roger Demchak. Temporary replacement drive belt for automotive vehicles. 3,841,168, Cl. 74-231.00j.
Dankel, Douglas D.; and Herscher, Lee R., to Roper Corporation. Safety guard arrangement for shredder-bagger. 3,841,571, Cl. 241-101.700.
Danneels, Guy: *See—*
Leblond, Jean; Danneels, Guy; and Lambert, Maurice, 3,841,941.
Darby, Joseph R.: *See—*
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,890.
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,955.
Dart Industries, Inc.: *See—*
McDonald, George K.; Douglas, Robert M.; and Leibson, Irving, 3,842,060.
Dasek, Jaoslav; Shepherd, David; and Traflnes, Knut Rude, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the production of zeaxanthin. 3,841,967, Cl. 195-29.000.
Dassesse, Pierre; and Delwiche, Marius, to Solvey & Cie. Apparatus for producing and recovering rubbery or sticky polymers. 3,841,381, Cl. 159-2.00r.
Data Optics Corporation, mesne: *See—*
Pao, Yoh-Han; and Claspy,Paul C., 3,842,372.
Datson, David Pender: *See—*
Luke, William George; and Datson, David Pender, 3,841,669.
Daubach, Ewald: *See—*
Belde, Horst; Oppenlaender, Knut; Daubach, Ewald; and Fikentscher, Rolf, 3,841,888.
Davies, Emrys; and Rippon, John Roy, to British Steel Corporation. Alloying steels. 3,841,867, Cl. 75-129.000.
Davies, Paul Trevor; and Morgan, John Harold, to Morgan Berkeley & Company Limited. Electrical chlorinator. 3,841,250, Cl. 114-.50r.
Davies, Terrence Ardern, to Square D Company. Method of making light-duty electrical contacts composed of silver and ruthenium dioxide. 3,841,869, Cl. 75-206.000.
Davis, Curry Beach; and McBridge, Joseph J., Jr., to Arizona Chemical Company, mesne. Catalytic isomerization of alpha-pinene. 3,842,135, Cl. 260-675.500.
Davis Electric Company: *See—*
Pepe, David L.; Palm, Theodore O.; and Johnson, Frank B., 3,841,575.
Davis, Leonard P.: *See—*
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., 3,841,836.
Dawson, Charles E., to Telephone Corporation of America. Optinal prepay coin operated telephone system. 3,842,210, Cl. 179-6.30r.
Dawson, Gaynor W., to Battelle Development Corporation. Process for removal of ammonia from aqueous streams. 3,842,000, Cl. 210-23.000.
Dayet, Jacques; Bastide, Pierre; and Besson, Marcel, to Delle-Alsthom. Circuit breaker with automatic ice removal means on contact bar. 3,842,221, Cl. 200-52.00r.
Daykin, Theodore W.; and Ryff, Anthony S., to Ford Motor Company. Laminated rotor structure for a hynamoelectric machine. 3,842,300, Cl. 310-216.000.
Daynard, Richard F., to American Optical Corporation. Pacer battery failure detection circuit. 3,841,336, Cl. 128-419.00p.
De Castiglione, Roberto: *See—*
Bernardi, Luigi; De Castiglione, Roberto; and Colonna, Vincenzo, 3,842,123.
De Noyer, Donald B., to Beloit Corporation. Hopper with interlocked charging door. 3,841,502, Cl. 214-17.00b.
De Wit, Benjamino: *See—*
Wesseling, Karel Hendrik; and De Wit, Benjamino, 3,841,313.
Deane, Graham, to National Research Development Corporation. Endoprosthetic knee joint. 3,840,905, Cl. 3-1.000.
Debart, Hubert, to Compagnie Generale d'Electricite. Doppler effect telemeter including frequency shifting. 3,841,755, Cl. 356-28.000.
Dechetette, Helen, to AMP Incorporated. Electrical connector tab receptacle. 3,842,391, Cl. 339-32.00r.
Declerco, Maurice G. Self-tailing winch. 3,841,606, Cl. 254-150.00r.
Degen, Rolf; and Zimmermann, Max, to BBC Brown Boveri & Company Limited. Method of, and apparatus for, supporting the moderator structure of a nuclear reactor. 3,841,965, Cl. 176-87.000.
Delaire, Georges, to Creusot-Loire. Installation for extraction of dust from fumes emitted from a mixer. 3,841,615, Cl. 266-15.000.
Delay, Elbert A.: *See—*
Fox J. C.; and Delay, Elbert A., 3,841,339.
Delle-Alsthom: *See—*
Dayet, Jacques; Bastide, Pierre; and Besson, Marcel, 3,842,221.
Delmar Chemicals Limited: *See—*
Podesva, Ctirad; and Vagi, Kitty, 3,842,094.
Delorme, Richard L. Reinforced structural element and method of making the same. 3,841,958, Cl. 161-161.000.
Delsa, Marcel; deceased; and Guilluni, Philips Jeannine. Electrolytic cell including a plurality of anodes grouped around each cathode for increased electrolyte circulation in the cell. 3,841,989, Cl. 204-212.000.
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, to Porta Systems Corp. Automated telephony testing and polling apparatus. 3,842,218, Cl. 179-175.30r.
Delwiche, Marius: *See—*
Dassesse, Pierre; and Delwiche, Marius, 3,841,381.
Demerin, Francois, to Fabriques De Produits Alimentaires Les Fils De William Saurin. Machine for cutting meat joints; specially breasts of pork. 3,841,186, Cl. 83-404.200.
Dennison Manufacturing Company: *See—*
Foret, Pierre G.; and Donohoe, John William, 3,841,624.
Dentsply Research & Development: *See—*
Wolf, Donald Timothy, 3,841,860.
Dera, Alain; Fayolle, Michel; and Maistrelli, Roger, 1/2% to Regie Nationale de Usines Renault and 1/2% to Automobiles Peugeot. Energy absorbing device. 3,841,681, Cl. 293-70.000.
Detko, Mildred A., 20% to Lee, Raymond, Organization, Inc., The. Mattress support. 3,840,909, Cl. 5-64.000.
Deutsche Bendix Ausrustungs GmbH: *See—*
Baum, Heinz; Camp, Eckart Op Den; Schrader, Gert; and Botteril, John Redvers, 3,841,444.
Deutsche Gold und Silber-Scheideanstalt vormals Roessler: *See—*
Meyer-Simon, Eugen; Schwarze, Werner; Thurn, Friedrich; and Michel, Rudolf, 3,842,111.
Dewberry, Albert W.: *See—*
Tine, Sebastian David; and Dewberry, Albert W., 3,841,438.
Dewey, Ernest A.; and Clements, Richard F., to Environmental Control Products, Inc. Ash removal system for incinerators. 3,841,241, Cl. 110-8.00r.
Dexter Corporation: *See—*

Fetscher, Charles A.; and Sparapany, John J., 3,842,141.
Deyerl, Herman F.: *See—*
Reynolds, Robert J.; and Deyerl, Herman F., 3,841,556.
Di Benedetto, Frank; and Viscolosi, Louis A., Jr. Continuous molding machine. 3,841,390, Cl. 164-329.000.
Di Stefano, Thomas H.: *See—*
Argyle, Bernell E.; and Di Stefano, Thomas H., 3,842,407.
Di Vita, Vito. Vehicle collision prevention device. 3,841,427, Cl. 180-98.000.
Diamond, Harvey J., to Plasti-Vac, Inc. Vacuum forming machine modular clamping frames. 3,841,819, Cl. 425-388.000.
Dianetti, Joseph C.: *See—*
Walker, Terence; and Dianetti, Joseph C., 3,842,253.
Dianetti, Joseph C., to American Optical Corporation. Illuminating system for contact lens ophthalmometer. 3,842,254, Cl. 240-41.00r.
Dickens, Lawrence E., to Westinghouse Electric Corporation. Balanced parametric amplifier. 3,842,359, Cl. 330-4.900.
Dickens, Lawrence E., to Westinghouse Electric Corporation. Parametric amplifier. 3,842,360, Cl. 330-4.900.
Dicks, Peter D. J.; and Hill, William M., to Spraymould (Bahamas) Limited. Method for forming a laminate. 3,841,935, Cl. 156-210.000.
Dieringer, Andrew M.; and Katcha, Frank F., to Rex Chainbelt Inc. Rail anchor applicator with automatic cycle and loading mechanism. 3,841,221, Cl. 104-17.00a.
Dijkstra, Fokke Cornelius; Groothuizen, Theodorus Maria; Pasman, Hermanus Johannes; and Van De Putte, Tonny, to Nederlandse Organisatie Voor Toegepast-Natuurweten Schappelijk Onderzoek Ten Behoeve Van de Rijksverdediging. Furnace. 3,842,181, Cl. 13-22.000.
Dimitracopoulos, Panayotis C. Method of making molds for molding or casting optical parts and the like. 3,840,977, Cl. 29-460.000.
Dimon, Donald F., to Hallicrafters Co., The. Adjustable parallel-T network. 3,842,362, Cl. 330-103.000.
Ditz-Crane: *See—*
Martin, Otis M., 3,841,050.
Dixon, Charles H., III, to RBP Chemical Corporation. Method of preparing printed circuit boards with terminal tabs. 3,841,905, Cl. 117-212.000.
Dixon, David Rodney; Turton, Cecil Nigel; and Williams, Ian Gabriel, to Imperial Chemical Industries Limited. Aromatic part-cured, polyimide moulding powders. 3,842,026, Cl. 260-30.80r.
Dixon, Norman B.: *See—*
Anagnostou, Taki J.; Dixon, Norman B.; and Sastry, Gundu M., 3,842,023.
Djordjevic, Ilija: *See—*
Staudt, Heinrich; Hofmann, Eberhard; and Djordjevic, Ilija, 3,841,111.
Dobinson, Frank; and Pelezo, Chris A., to Monsanto Company. Process for preparing spinning solutions of polyhydrazides. 3,842,028, Cl. 260-326.0na.
Doble Engineering Company: *See—*
Povey, Edmund H., 3,842,344.
Dobrusskin, Alexander; and Leyendecker, Helmut, to Patent-Treuhand-Gesellschaft fur elektrische Glukhampen mbH. High pressure mercury vapor discharge lamp with metal halide additives. 3,842,307, Cl. 313-184.000.
Dobrzelecki, Arthur J.; and Buggeln, Richard C., to United States of America, Air Force. Chemical laser nozzle system. 3,842,363, Cl. 331-94.50g.
Docutel Corporation: *See—*
Johnson, Ivan E., 3,841,225.
Doehrman, Charles E.: *See—*
Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., 3,842,192.
Doherty, Norman R. Single stroke tool and means for storing energy therein. 3,842,295, Cl. 310-12.000.
Doi, Kikuo; and Futami, Takehiro, to Nippon Electric Company, Limited. Electromechanical transducer comprising a pair of antiparallel poled rectangular piezoelectric ceramic pieces. 3,842,294, Cl. 310-9.500.
Dolan, Edward M. Portable basketball backstop construction. 3,841,631, Cl. 273-1.50r.
Dolch, Volker, to Scanner, Inc. Contrast processing of cideo signals with self adjusting reference. 3,842,200, Cl. 178-7.100.
Dole Refrigerating Company: *See—*
Bradshaw, Darrell L., 3,842,288.
Dolgen, Igor E.: *See—*
Georgen, Robert T.; and Dolgen, Igor E., 3,840,974.
Domenighetti, Domenico. Paving vibratory finishing machine having a device for constant compaction of the deposited layer. 3,841,777, Cl. 404-84.000.
Dominck Hunter (Engineers) Limited: *See—*
Domnick, Keith Raphael, 3,841,484.
Domnick, Keith Raphael, to Dominck Hunter (Engineers) Limited. Fluid filter with color indicator. 3,841,484, Cl. 210-95.000.
Donath, Gerhard: *See—*
Heitmann, Hans-Gunter; Donath, Gerhard; and Beyer, Werner, 3,841,486.
Donelley, R. R., & Sons Company: *See—*
Swanson, Kermit E., 3,841,622.
Donohoe, John William: *See—*
Foret, Pierre G.; and Donohoe, John William, 3,841,624.
Doolin, John H., to Worthington Corporation. Adaptor and frame for a centrifugal pump. 3,841,791, Cl. 415-170.00a.
Dorazio, Alton, Jr.: *See—*
Altenburger, Otto; and Dorazio, Alton, Jr., 3,842,214.
Dorfel, Gerhard Walter, to A. Ahlstrom Osakcyhtio. Method and apparatus for continuously reeling webs of material into individual rolls. 3,841,578, Cl. 242-66.000.
Dorner, Heinz. Multi-purpose built-up shelving. 3,841,725, Cl. 312-107.000.
Dorschner, Kenneth P.: *See—*
Bordenca, Carl; and Dorschner, Kenneth P., 3,842,179.
Doster, William H.: *See—*
Callins, Harold T.; and Doster, William H., 3,842,325.
Douglas, Robert M.: *See—*
McDonald, George K.; Douglas, Robert M.; and Leibson, Irving, 3,842,060.
Dow Chemical Company, The: *See—*
Chisholm, Douglas S., 3,842,242.
Garrett, Walter L., 3,842,020.
Knox, George P., 3,841,208.
Pashak, John F., 3,841,127.
Wang, Samuel S. M., 3,842,022.
Wright, Donald R., 3,841,812.
Dragonas, Gerasimos Nicolaou; and Spyrou, Andrew George. Vessel with removable sections. 3,841,254, Cl. 114-74.00r.
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and Mc Carroll, Alan F., to Xerox Corporation. Electrostatic color reproduction method. 3,841,751, Cl. 355-4.000.
Dravo Corporation: *See—*
Krish, Kris S., 3,841,865.
Dreis & Krump Manufacturing Company: *See—*
Hryc, John F., 3,841,140.
Dresser Industries, Inc.: *See—*
Crow, Morgan LeVon, 3,841,422.
Drexel Industries, Inc.: *See—*
Hollenbach, Edwin A., 3,841,503.
Drexler, Edward E.; and Norder, Paul D., to Xerox Corporation. Duplex reproduction system. 3,841,754, Cl. 355-17.000.
Driessen, Antonius Jozephus Gerardus Cornelis: *See—*
Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, 3,842,304.
Drive, "W" "B". Regenerative ram jet engine. 3,841,092, Cl. 60-269.000.
Droge, Josef: *See—*
Kutscher, Gerhard; Droge, Josef; Wehling, Rolf; and Neubert, Rolf, 3,841,075.
Drone, Gary A.; and Ross, Roy C., to Fiat-Allis Construction Machinery, Inc. Spring applied steering brakes controlled by transmission clutch pressure. 3,841,450, Cl. 192-4.00c.
Dronick, Lester Alexander; and Zimmerman, Edwin Henry, to Aycock, Inc. Traveling overhead cranes. 3,841,495, Cl. 212-125.000.
Drozek, Julius S.; Horvath, Richard A.; and Vilagi, Burton J., to Nordson Corporation. Extrusion nozzle. 3,841,567, Cl. 239-570.000.
Drutchas, Gilbert H.; Spencer, Phillip B.; and Hovanchak, John A., to TRW Inc. Floating plate for end clearance seal on gear pumps. 3,841,804, Cl. 418-131.000.
Du Pont de Nemours, E. I., and Company: *See—*
Calabrese, Salvadore Joseph, 3,841,724.
Eastman, Ernest Francis, 3,842,062.
Hartsog, Dawes Collidge, 3,841,078.
Hick, Robert M., 3,841,895.
Witfield, Harold B., Jr.; and Bentley, Thomas P., 3,842,152.
Ducassou, Bernard: *See—*
Crutsch, Louis; and Ducassou, Bernard, 3,842,256.
Dudek, Ronald P.; Kosmos, Peter; and Tesk, John A., to Howmedica. Nickel alloys. 3,841,868, Cl. 74-171.000.
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich. Flux for accomplishing welding-type electroslag process. 3,841,92, Cl. 148-26.000.
Dudzic, Max S.: *See—*
Anderton, John J.; Dudzic, Max S.; and Wrhen, Wilmer C., 3,841,389.
Dumayne, Raymond, to Commissasiat a l'Energie Atomique. Device for handling the elements of a nuclear reactor core. 3,841,964, Cl. 176-30.000.
Dunlop Limited: *See—*
Edwards, Reginald H., 3,841,375.
Hamacher, Wilhelm; and Leinweber, Hubert, 3,841,378.
Dunne, Michael P., to Sanders Associates, Inc. Digital sweep frequency generator employing linear sequence generators. 3,842,354, Cl. 328-14.000.
Duperon, Terry L., to Trippensee Corporation. Operating apparatus for water samplers. 3,841,162, Cl. 73-425.40r.
Duprey, Richard H.: *See—*
Benoit, Roland A.; and Duprey, Richard H., 3,840,911.
Duropenta Holdings (Proprietary) Limited: *See—*
Henfrey, Basil, 3,841,101.
Dyke, Raymond William, to Vosper Limited. Gas-cushion vehicles. 3,841,433, Cl. 180-116.000.
Dyrschka, Helmut: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Dyrschka, Helmut, 3,842,015.

E. & J. Winery: *See—*
Caputi, Arthur, Jr.; and Wong, Thomas C., 3,842,007.
Eagle Monitor Systems: *See—*
Kopp, Keith A., 3,841,315.
East/West Medical Products, Inc., mesne: *See—*
Spinosa, Dom; and Varga, John M., 3,841,799.
Easte, Avard Joseph, to Northwest Sanitation Products, Inc. Automatic liquid dispenser for an inverted bottle. 3,841,524, Cl. 222-57.000.
Eastman, Ernest Francis, to Du Pont de Nemours, E. I., and Company. Water-soluble complexes of protein and anionic polyelectrolytes such as sodium carboxymethyl cellulose. 3,842,062, Cl. 260-112.00r.
Eastman Kodak Company: *See—*
Burness, Donald M.; and Silverman, Robert A., 3,841,872.
Coil, Michael K.; and Eder, Thomas W., 3,841,147.
Craig, Loren J.; and Hochreiter, William T., 3,842,423.
Ewald, William P., 3,841,748.
Grant, Peter M.; Taylor, Robert B.; and Jackson, Winston J., Jr., 3,842,021.
Kertel, Stanley S., 3,841,880.
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., 3,841,836.
Mowrey, Rowland George; and Wilkes, Glenn Richard, 3,841,873.
Rosborough, Robert S., Jr.; and Wright, Luther M., 3,841,934.
Wilson, John C.; and Hamb, Fredrick, 3,842,042.
Eastwood, Thomas, to Brown, David, Tractors Limited. Clutch with engine oil cooling. 3,841,455, Cl. 192-113.00b.
Eaton, Richard: *See—*
Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 3,841,744.
Eaton, Richard Rochester: *See—*
Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 3,841,744.
Ebeling, Ernest C.: *See—*
Ebeling, Franklin D.; and Ebeling, Ernest C., 3,841,508.
Ebeling, Franklin D.; and Ebeling, Ernest C. Refuse vehicle with a semi-automated refuse container pick-up and unloading device. 3,841,508, Cl. 214-302.000.
Eberle, William J., to General Battery Corporation. Battery, components, and method of making. 3,841,915, Cl. 136-134.00r.
Ebersole, John F., to Itek Corporation. Optical waveguide system for producing a line of modulated radiation data. 3,841,733, Cl. 350-160.00r.
Eckert, Konrad, to Bosch, Robert, GmbH. Fuel metering device for internal combustion engines. 3,841,613, Cl. 261-36.00a.
Eckhardt, Hans A. Apparatus for processing plastic materials. 3,841,814, Cl. 425-208.000.
Ecodyne Corporation: *See—*
Weis, Frank G., 3,842,224.
Edeline, Jean-Claude; and Lavergne, Justin, to Commissariat A L Energie Atomique. Method and device for the merchanical modulation of a particle flux. 3,842,285, Cl. 250-497.000.
Eder, Thomas W.: *See—*
Coil, Michael K.; and Eder, Thomas W., 3,841,147.
Edgcome Steel Company: *See—*
Hitchiner, Joseph A.; Brown, Lawrence H.; and Blodgett, Monte R., 3,841,064.
Edwards, Alan Harold: *See—*
Aaron, Colin; Edwards, Alan Harold; and Tessier, Keith Campbell, 3,841,850.
Edwards, Gordon J.: *See—*
Arff, Uwe F.; and Edwards, Gordon J., 3,840,991.
Edwards, Michael: *See—*
Lumb, John B.; and Edwards, Michael, 3,842,031.
Edwards, Reginald H., to Dunlop Limited. Pneumatic tires. 3,841,375, Cl. 152-355.000.
Edwin, Allan I.; Vlach, Thomas L.; and Bennett, Melvin T., to Interactive Systems, Inc. Tool wear detector. 3,841,149, Cl. 73-71.400.
Eftex-Texmato GmbH & Co.: *See—*
Feische, Josef, 3,840,913.
Eggert, Noel B., to Owens-Illinois, Inc. Molded plastic container secondary operations machine. 3,841,468, Cl. 198-221.000.
Eheim, Franz, to Bosch, Robert, GmbH. Engine runaway preventing safety means associated with a distributor-type fuel injection pump. 3,841,286, Cl. 123-140.00r.
Ehrlich, Donald J., to Monon Trailer, Inc. Cargo transporter having door-operated cargo retainer. 3,841,661, Cl. 280-179.00r.
Eibich, Alfred: *See—*
Parkinson, John; Eibich, Alfred; and Ronald, Thomas T., 3,841,259.
Eimer, Klaus, to Ludwig, Taprogge Reinigungsanlagen fur Rohren-Warmeaustauscher. Hydrodynamic sorting apparatus. 3,841,397, Cl. 165-95.000.
Eisenberg, Harvey. Container for liquids having hinged lid allowing easy stacking. 3,841,528, Cl. 222-143.000.
Ekstrom, Ake; Juhlin, Lars-Erik; and Olsson, Karl-Erik, to Allmanna Svenska Elektriska Aktiegolaget. Thyristor rectifier having a device for self-ignition or recovery protection. 3,842,337, Cl. 321-27.00r.
El Bindari, Ahmed, to Clad Metals Corporation. Method for inserting rods into coiled tubes. 3,840,972, Cl. 29-433.000.
El Paso Products Company: *See—*
Lo, Ching-Tsan; Miller, Joe Jed; and Cywinski, Norbert Francis, 3,842,132.
Elco Corporation: *See—*
Fuller, Ross; Munshower, Kenneth; and Lightkep, William E., 3,841,472.
Elford, Peter Ellice. Cartons, trays and the like. 3,841,476, Cl. 206-427.000.
Elitex, Zavody textilniho strojirenstvi generalni reditelstvi: *See—*
Svaty, Vladimir; and Taticek, Lubomir, 3,841,358.
Uhlir, Pavel; and Uhlirova, Jarmila, 3,841,112.
ELITEX-Zavody Textilniho Strojirenstvi Generalni reditelstvi: *See—*
Kejnovsky, Bohumil; Fikrle, Jan; and Hobza, Antonin, 3,841,115.
Ellinghausen, Edgar A.; and Johnson, George B., to Interstate Drop Forge Co. Power control circuit for resistance heating moving conductors. 3,842,239, Cl. 219-155.000.
Ellis, Clarence Eugene. Pit barbecue apparatus. 3,841,211, Cl. 99-482.000.
Ellis, Kenneth Harold: *See—*
Appleby, Brian Lawrence; Malpass, Alan; and Ellis, Kenneth Harold, 3,841,589.
Ellis, Shirley Russell, to Jester Company Limited, The. Packages of bobbins. 3,841,475, Cl. 206-391.000.
Elmer, Thomas H.: *See—*
Armistead, William H.; Elmer, Thomas H.; and Lichtenstein, Ivan E., 3,842,017.
Eltsov, Nikolai Pavlovich: *See—*
Nikitin, Vladislav Iosifovich; and Eltsov, Nikolai Pavlovich, 3,841,410.
Emberg, Donald J.: *See—*
Fox, Richard Q.; and Emberg, Donald J., 3,841,122.
Emerson Electric Co.: *See—*
Hines, Burgess W., 3,841,518.
Kinsella, Howard R.; and Smith, Carl A., 3,841,552.
Emery, Anthony Nicholas; Barker, Sidney Alan; and Novais, Julio Maggioly, to Ranks Hovis Mc Dougall, Limited. Preparation of immobilized enzymes. 3,841,969, Cl. 195-63.000.
Emmons, Lawrence D., to Ampex Corporation. Method of modulating a beam of electromagnetic radiation. 3,842,312, Cl. 315-30.000.
Enberg, Kenneth R.: *See—*
Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., 3,841,826.
Enekes, Sandor: *See—*
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; and Vamosi, Jozsef, 3,841,866.
Engebretsen, Einar O., to Hobart Manufacturing Company, The. Compactor compartment arrangement. 3,841,214, Cl. 100-215.000.
Engeler, Paul, to SIG Schweizerische Industrie-Gesellschaft. Device for feeding wrappers in a packaging machine. 3,841,057, Cl. 53-389.000.
Engelhardt, John Nicol; and Rousseau, Roy Settle, to Kartridg Pak Co., The. Separating meat from bones. 3,841,569, Cl. 241-4.000.
English Clays Lovering Pochin & Company Limited: *See—*
Broad, Bernard Henry, 3,841,568.
Luke, William George; and Datson, David Pender, 3,841,669.
English, Vergil R. Dental hygiene device. 3,840,992, Cl. 32-40.00r.
Englund, Gosta Roland; Lundell, Bjorn Sture; and Lindelow, Claes-Goran, to Svenska Dataregister AB. Coin dispensing device. 3,841,341, Cl. 133-4.000.
Entreprise d'Equipement Mecaniques & Hydrauliques E.M.H.: *See—*
Vilain, Robert, 3,841,249.
Environment/one Corporation: *See—*
Farrell, Robert Paul, Jr., 3,841,998.
Environmental Control Products, Inc.: *See—*
Dewey, Ernest A.; and Clements, Richard F., 3,841,241.
Environmental Sciences, Inc.: *See—*
Conner, Jessee R.; and Polosky, Ronald J., 3,841,102.
Epstein, James: *See—*
Boyle, Gerard H.; Epstein, James; and Liang, Charles C., 3,841,914.
Erby, William A.; and Tompkins, James F., to Air Products and Chemicals, Inc. Catalytic production of polyhalo-keto-alkenoic acids. 3,842,126, Cl. 260-539.00r.
Erickson, Dennis E.; and Harrington, Harry L., to Clark Equipment Company. Lift truck upright. 3,841,442, Cl. 187-9.000.
Erwin, Ransome W., to Austral-Erwin Engineering Co., mesne. Preparation of plastic-metal products including laminates, composite tubes and the like. 3,841,937, Cl. 156-286.000.
ESB Incorporated: *See—*
Anderson, Charles E., 3,841,913.
Escher Wyss G.m.b.H.,: *See—*
Kahmann, Albrecht, 3,841,573.
Espeel, Frans Joris, to Gebruder Buehler A.G. Pneumatic control system for air filter cleaning apparatus. 3,841,065, Cl. 55-284.000.
Esso Research and Engineering Company: *See—*
Aaron, Colin; Edwards, Alan Harold; and Tessier, Keith Campbell, 3,841,850.
Cohen, Saul J.; and Hochman, Jack M., 3,841,991.
Cross, Newbold O.; and Thompson, Jeffrey L., 3,841,146.
Lohkamp, Dwight Theodore; and Prentice, James S., 3,841,953.
Lundberg, Robert D.; and Makowski, Henry S., 3,842,154.
Pappas, James J.; Jacobson, Norman; and Kresge, Edward N., 3,842,010.
Etchelecou, Robert J. L.; and Savel, John J. Device for temporarily sealing holes in boats. 3,841,256, Cl. 114-227.000.
Ethyl Corporation: *See—*
Burt, William E., 3,842,006.
Niebylski, Leonard M.; and Immethun, Peter A., 3,842,159.

Eto, Tetsutaro. Integrating analog-to-digital converter. 3,842,416, Cl. 340-347.0nt.

Ett, Allen Harold; and Rosenbaum, Walter Steven, to International Business Machines Corporation. Bayesian online numeric discriminator. 3,842,402, Cl. 340-146.30s.

Evers-Euterneck, Ernst T., to United States of America, Army. Constant bearing course homing missile. 3,841,585, Cl. 244-3.150.

Eversole, Russell A.: *See—*
Scott, Harold W.; and Eversole, Russell A., 3,841,976.

Everson, Evan P.: *See—*
Robinson, Roland L.; Boltz, Chadwick C.; Everson, Evan P.; and Mac Pherson, Douglas E., 3,841,584.

Ewald, William P., to Eastman Kodak Company. Projector lap dissolve device. 3,841,748, Cl. 353-83.000.

Ewert, Bruno; and STein, Gunter, to General Motors Corporation. Vehicle occupant-restraint arrangements. 3,841,657, Cl. 280-150.0sb.

Excelermatic, Inc.: *See—*
Kraus, Charles Edward, 3,841,173.

Exotech, Incorporated: *See—*
Hall, James Michael; and Clipp, Louis L., 3,841,559.

Eyster, Charles U., to Becton, Dickinson and Company. Pocket assembly having adhesive means for attachment to a garment. 3,840,901, Cl. 2-247.000.

Fabrique National Herstal S.A. en abrege EN: *See—*
Vandermeirsch, Marcel A., 3,841,114.

Fabriques De Produits Alimentaires Les Fils De William Saurin: *See—*
Demerin, Francois, 3,841,186.

Falbel, Gerald, to Wormser Sc`entific Corporation. Solar energy system for a building. 3,841,302, Cl. 126-270.000.

Falcone, Francesco; and Hunnes, Odd Peder, to Aktiebolaget Bofois. Device for a straddle-carrier or a similar vehicle. 3,841,429, Cl. 180-77.00s.

Falkehag, Sten I.; and Bailey, Carl W., III, to Westvaco Corporation. Dyestuff compositions containing lignin surfactants carboxy substituted. 3,841,887, Cl. 106-123.0lc.

Falkner, Raimund; and Grune, Heinz, to RAPENA Patent- und Verwaltungs-AG. Method of making profiled rails and bodies composed thereof. 3,841,134, Cl. 72-181.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,842,078.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Kampe, Klaus-Dieter, 3,842,109.

Farish, Owen: *See—*
Hundstad, Richard L.; and Farish, Owen, 3,842,365.

Farmer, Charles G.: *See—*
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,840,979.

Farnsworth, Philo T., III. Modular vertex structure. 3,841,039, Cl. 52-81.000.

Farrell, Robert Paul, Jr., to Environment/one Corporation. Aerobic wastewater treatment process with partial reuse and infrequent dosing to soil. 3,841,998, Cl. 210-16.000.

Farrer, Oscar L. Paper roll holder. 3,841,576, Cl. 242-55.200.

Farrington, Robert C., to Timeline Inc. Barrel cleaning apparatus. 3,841,564, Cl. 239-281.000.

Farris, Robert E.; and Green, Maurice E., Jr., to Kaiser Aluminum & Chemical Corporation. High alumina refractory. 3,841,884, Cl. 106-65.000.

Fayolle, Michel: *See—*
Dera, Alain; Fayolle, Michel; and Maistrelli, Roger, 3,841,681.

Feigl, Erich: *See—*
Mattes, Bernhard; and Feigl, Erich, 3,842,317.

Feingold, Stanley: *See—*
Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 3,841,744.

Feische, Josef, to Eftex-Texmato GmbH & Co. Relating to a net for upholstered furniture. 3,840,913, Cl. 5-191.000.

Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica, Societa per Azioni. Orally administered contrast agents for cholecystography. 3,842,124, Cl. 260-501.110.

Feldstein, Nathan; and Lancsek, Thomas Stephen, to RCA Corporation. Method for electroless deposition of metal using improved colloidal catalyzing solution. 3,841,881, Cl. 106-100.000.

Fendel, Kurt: *See—*
Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, 3,842,055.

Fergg, Berthold; Zahn, Wolfgang; and Hujer, Friedrich, to AGFA-Gevaert Aktiengesellschaft. Method of sealing open-ended envelopes for photographic film or the like. 3,841,936, Cl. 156-216.000.

Ferner, Jack C.: *See—*
Zinnbauer, Frederick W.; and Ferner, Jack C., 3,841,138.

Ferrand, Marcel. Cultivation pot for seedlings and plants. 3,841,021, Cl. 47-1.200.

Ferre, Glenn E.; Franz, Maurice F.; Lohbauer, Kenneth R.; and McMillan, William D., to Caterpillar Tractor Company. Combined engine speed and pressure responsive control for variable displacement pumps. 3,841,795, Cl. 417-216.000.

Ferro Corporation: *See—*
Rion, Richard G.; and Gazo, Louis J., Jr., 3,841,986.

Fetscher, Charles A.; and Sparapany, John J., to Dexter Corporation. Silicone-epoxy copolymers and molding powders obtained therefrom. 3,842,141, Cl. 260-824.0ep.

Fetzer, Gustav: *See—*
Krauss, Paul; and Fetzer, Gustav, 3,841,077.

Fiat-Allis Construction Machinery, Inc.: *See—*
Drone, Gary A.; and Ross, Roy C., 3,841,450.

Fibreglass Limited: *See—*
Thatcher, Kenneth Cyril, 3,841,184.

Ficklin, Ann C.: *See—*
Caldwell, Carroll E.; and Ficklin, Ann C., 3,841,863.

Field-Richards, Hugh Sherwood, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Conference circuits for delta-modulated digital telecommunications systems. 3,842,351, Cl. 25-38.00b.

Fikentscher, Rolf: *See—*
Belde, Horst; Oppenlaender, Knut; Daubach, Ewald; and Fikentscher, Rolf, 3,841,888.

Fikrle, Jan: *See—*
Kejnovsky, Bohumil; Fikrle, Jan; and Hobza, Antonin, 3,841,115.

Finger, John F.; and Pochop, Merle E., to Sioux Steam Cleaner Corporation. Multi-pass heating apparatus with expandable air cooled jacket. 3,841,273, Cl. 122-248.000.

Fink, Hermann, to Siemens Aktiengesellschaft. Suspension system for a magnetic suspension railroad. 3,841,227, Cl. 104-148.550.

Fischer, Jacob G. Folding bed. 3,840,912, Cl. 5-111.000.

Fisher, Howard M.; and Montgomery, Harry T., to Pennsylvania Engineering Corporation. Adjustable tuyere for metallurgical vessels. 3,841,617, Cl. 266-41.000.

Fishkin, Edward A.; and Wilson, Harry W., to Mine Safety Appliances Company. Process for the production of nitronium perchlorate. 3,842,162, Cl. 423-386.000.

Fitterer, Horst: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, 3,841,582.

Fitzgerald, Mack A., Jr.; Scott, Carl W.; and Scott, Carl W., Jr., to Rolling Systems, Inc. Carpet cleaning machine. 3,840,935, Cl. 15-322.000.

Fitzgerald, William Maurice Bard. Power units. 3,841,797, Cl. 417-323.000.

Flannery, John B., Jr.: *See—*
Haas, Warner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., 3,842,275.

Fleagle, Joseph E., to Wagner Electric Corporation. Signal processing circuit for wheel slip control systems. 3,842,355, Cl. 328-114.000.

Fleishman, Seymour. Disposable tongs. 3,841,684, Cl. 294-1.00r.

Fleissner, Heinz, to Vepa AG. Process and apparatus for the production of continuous random webs. 3,841,933, Cl. 156-148.000.

Fletcher, Lillian: *See—*
Gallo, Joseph; and Fletcher, Lillian, 3,841,686.

Florence, Jack M.; and Smith, William E., to Owens-Illinois, Inc. Aluminum metaphosphate source body for doping silicon. 3,841,927, Cl. 148-189.000.

Florjancic, Dusan, to Sulzer Brothers Ltd. Method and cooling system for cooling centrifugal pumps. 3,841,786, Cl. 415-114.000.

Fluidtech Corporation: *See—*
Osheroff, Gene W., 3,841,392.

FMC Corporation: *See—*
Chalupsky, Paul A.; and Nephew, Oliver T., 3,841,494.
Culbertson, George W., 3,841,453.
Goodley, George F., 3,841,213.
Nemschoff, Mark S., 3,841,426.

Fong, Timothy T., to Hughes Aircraft Company. Coaxial trapatt oscillator operable at a fixed frequency and at a high efficiency. 3,842,370, Cl. 331-101.000.

Ford Industries, Inc.: *See—*
Owen, James; and Hoven, El Don L., 3,842,216.

Ford, Maynard; and Lee, Charles D., Jr., to Parks-Cramer Company. Roving feed stop device. 3,841,076, Cl. 57-83.000.

Ford Motor Company: *See—*
Apostoleris, Theodore G., 3,842,302.
Clemens, William J., 3,841,678.
Daniel, Roger P., 3,841,163.
Daykin, Theodore W.; and Ryff, Anthony S., 3,842,300.
Freismuth, Richard J.; and Pruchno, Albert A., 3,841,612.
Hogland, Keith C., 3,842,222.
Kovach, James T.; and Paluszny, Antoni, 3,841,720.
Krygowski, Richard P., 3,841,284.
Maxey, Joel W., 3,841,774.
Muller, George H., 3,841,679.
Muller, George H., 3,841,680.
Peel, Richard E.; and Singh, Harkrishan, 3,841,659.
Rogerson, Jerry B., 3,841,282.
Ryff, Anthony S., 3,840,983.
Singh, Harkrishan, 3,841,658.
Slessor, John M., 3,840,975.
Turner, Philip L., 3,841,759.

Foresta, Francis A.; and Bonsky, Elmer C., to T.A.D. Avanti, Inc. Telephone answering instrument and system with remote control. 3,842,209, Cl. 179-6.00e.

Foresta, Francis A.; and Bonsky, Elmer C., to T.A.D. Avanti, Inc. Telephone answering instrument and system with disconnect by silence or tone. 3,842,213, Cl. 179-6.00r.

Foret, Pierre G.; and Donohoe, John William, to Dennison Manufacturing Company. Ticket reader. 3,841,624, Cl. 271-180.000.

Forler, C. Richard; and Heins, Conrad F. Method and apparatus for repairing cracks in windshields. 3,841,932, Cl. 156-94.000.

Formanek, Victor: *See*—
Rey, Maurice; and Formanek, Victor, 3,841,864.

Forschner, Andrew C., to Johnson Rubber Company, The. Extruder with feed system. 3,841,818, Cl. 425-376.000.

Fortescue, Peter; and Rickard, Corwin L., to General Atomic Company. Closed cycle gas turbine system. 3,841,100, Cl. 60-690.000.

Fortis, John C. Sentinnel apparatus. 3,842,255, Cl. 240-49.000.

Foure, Claude Desire: *See*—
Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, 3,841,565.

Fowler, W. D., & Sons Corp.: *See*—
Fowler, William Douglas; and Brookman, Paul, 3,841,558.

Fowler, William Douglas; and Brookman, Paul, to Fowler, W. D., & Sons Corp. Arrangement for irrigating and controlling temperature and humidity of plants. 3,841,558, Cl. 239-11.000.

Fox J. C.; and Delay, Elbert A. Stackable safety ash tray. 3,841,339, Cl. 131-235.00r.

Fox, Richard Q.; and Emberg, Donald J., to Westinghouse Electric Corporation. Rolling mill gauge control method and apparatus including feedback correction. 3,841,122, Cl. 72-6.000.

Fox, Richard Q.; and Smith, Andrew W., Jr., to Westinghouse Electric Corporation. Rolling mill gauge control method and apparatus including entry gauge correction. 3,841,123, Cl. 72-8.000.

Fox, Wiliam B.: *See*—
Young David E.; Gould, Douglas E.; Anderson, Lowell Ray; and Fox, Wiliam B., 3,842,156.

Francque, Marc: *See*—
Scherhab, Berng; Koppelmann, Eliahu; Wolz, Hermann; and Francque, Marc, 3,842,098.

Franklin Electric Co., Inc.: *See*—
Schaefer, Edward J., 3,842,298.

Franz, James H., Jr., to Westinghouse Electric Corporation. Oscillator circuit for providing a failsafe direct current voltage output in response to a periodic signal input. 3,842,334, Cl. 321-2.000.

Franz, Maurice F.: *See*—
Ferre, Glenn E.; Franz, Maurice F.; Lohbauer, Kenneth R.; and McMillan, William D., 3,841,795.

Frau Irma Ungerer: *See*—
Rodach, Alexander, 3,841,580.

Frazier, Melvin A., to Collins Radio Company. Voltage standing wave ratio detecting and adjusting apparatus. 3,842,358, Cl. 329-129.000.

Freebourn, Norbert E.: *See*—
Wheeler, Claud R.; and Freebourn, Norbert E., 3,841,235.

Freed, Lyle C. Vortex arrestor and visualization system. 3,841,587, Cl. 244-40.00a.

Frehe, Dieter. Engine cooling system. 3,841,278, Cl. 123-41.610.

Freiling, Albert J. Detachable rear sight for shotguns having flat sided receivers. 3,840,995, Cl. 33-233.000.

Freismuth, Richard J.; and Pruchno, Albert A., to Ford Motor Company. Altitude and temperature compensated carburetor. 3,841,612, Cl. 261-23.00a.

Fretwell, Richard D., to MI², Incorporated. Data set control logic. 3,842,207, Cl. 179-2.0dp.

Freudenberg, Carl, Firma: *See*—
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.

Fried, Krupp Gesellschaft mit beschrankter Haftung: *See*—
Hejj, Erwin; Sigl, Dieter; and Soddemann, Hans, 3,841,224.

Fried, Robert: *See*—
Salter, Andrew; and Fried, Robert, 3,841,309.

Friedell, Peter E. Subepidermal cannular instrument and method for automated determination of bleeding time and blood loss. 3,841,307, Cl. 128-2.00g.

Friedheim, Ernst Albert Hermann. Method of combating filariasis in dogs. 3,842,171, Cl. 424-245.000.

Friedland, Jacques; and Habib, Pierre. Tank for a swimming pool or the like. 3,841,041, Cl. 52-169.000.

Friedlander, Eirch Siegfried; and Thanawala, Hemesh Laxmidas, to Associated Electrical Industries Limited. Voltage stabilising arrangements. 3,842,342, Cl. 323-124.000.

Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy, to British Petroleum Company, Limited, The. Graphite pellets. 3,842,014, Cl. 252-447.000.

Friese, Karl-Hermann; Geier, Heinz; Pollner, Rudolf; and Schallert, Heino, to Bosch, Robert, G.m.b.H. Electro-chemical sensor, particularly for use in the exhaust system of internal combustion engines. 3,841,987, Cl. 204-195.00s.

Friesen, Nicholas, to Happy Horse-Feed Vendors Ltd. Dispenser for feed grains and the like. 3,841,523, Cl. 222-2.000.

Froberg, Magnus L.; and Maddux, John F., to Owens-Corning Fiberglas Corporation. Apparatus and method for starting an electric glass melting furnace. 3,842,180, Cl. 13-6.000.

Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, to Opti-Holding AG. Slide fastener with coupling coils on knitted tapes. 3,840,946, Cl. 24-205.10c.

Fuckert, Karl Otto: *See*—
Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, 3,841,977.

Fuhrmann, Robert; Koff, Fred W.; and Sifniades, Stylianos, to Allied Chemical Corporation. Racemization process for alpha-aminocaprolactam and lysine amide. 3,842,073, Cl. 260-239.30r.

Fuji Photo Film Co., Ltd.: *See*—
Sakaki, Hirokazu, 3,841,218.
Shimoda, Noboru; and Koba, Sadaaki, 3,842,282.
Takahashi, Tsunehiko; and Nabara, Akira, 3,842,195.

Fuji Xerox Co., Ltd.: *See*—
Terajima, Yasuhiko; Okada, Ryuzo; and Horie, Kiyoshi, 3,841,752.

Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, to Bridgestone Tire Company Limited. Rubber compositions. 3,842,034, Cl. 260-45.80n.

Fujimoto, Joji: *See*—
Kishimoto, Kenichi; Miyauchi, Hiroshi; Inagaki, Yasuhiko; and Fujimoto, Joji, 3,841,835.

Fujita, Rokuro: *See*—
Huang, Ching Yun; and Fujita, Rokuro, 3,841,903.

Fujita, Tatsu: *See*—
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, 3,841,129.

Fukuda, Yasuhiko; and Osada, Isao, to Nippon Chemical Industrial Co., Ltd. Process for preparing ferromagnetic chromium dioxide. 3,842,011, Cl. 252-62.510.

Fukui, Kiyoshi: *See*—
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.

Fuller, Ross; Munshower, Kenneth; and Lightkep, William E., to Elco Corporation. Pin-terminal carrier strip. 3,841,472, Cl. 206-329.000.

Fulton Industries, Inc.: *See*—
Grove, John L., 3,841,436.

Furbeck, Warren R.: *See*—
Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., 3,841,620.

Furukawa, Masamichi: *See*—
Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, 3,841,750.

Futami, Takehiro: *See*—
Doi, Kikuo; and Futami, Takehiro, 3,842,294.

Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, to Wackie Chemie GmbH. Process for dispersion polymerization of vinyl chloride with low polymer deposition. 3,842,055, Cl. 260-87.100.

Gabriel, William L., to Signode Corporation. Fastener stack and fasteners having bodies of foam. 3,841,473, Cl. 206-338.000.

Gach, Peter P.: *See*—
Montgomery, ary B.; and Gach, Peter P., 3,841,514.

Galigher Company, The: *See*—
Huntington, Fred R., 3,841,161.

Gall, Martin: *See*—
Hester, Jackson B., Jr.; and Gall, Martin, 3,842,089.

Gall, Martin; and Hester, Jackson B., Jr., to Upjohn Company, The. Certain 1-aminomethyl-6-phenyl 4H-s-triazolo (4,3,a) (1,4) benzodiazepines. 3,842,090, Cl. 260-247.100.

Gallo, Joseph; and Fletcher, Lillian. Pet Waste pickup device. 3,841,686, Cl. 294-19.00r.

Galloway, James H., to Oxy Metal Finishing Corporation. Balancing assembly for parallelled rectifiers. 3,842,336, Cl. 321-27.00r.

Galperin, Jury Aronovich: *See*—
Sljusarev, Jury Evgenievich; Reznik, Boris Grigorievich; and Galperin, Jury Aronovich, 3,841,788.

Gambro AG: *See*—
Hagstrom, Olov; and Riede, Gerhard, 3,841,491.

Gammon, Michael William: *See*—
Benatt, Frank George Simon; and Gammon, Michael William, 3,841,862.

Gandhi, Niranjan R.; and Richardson, Gary H., to Utah State University Foundation. Automatic protein analysis system and method. 3,841,834, Cl. 23-231.000.

Garcia Corporation, The: *See*—
Gregory, Francis J., 3,841,015.

Gardella, Adriano. Weft stop motion shuttleless looms. 3,841,359, Cl. 139-370.000.

Gardi, Rinaldo; and Vitali, Romano, to Warner-Lambert Company. Ethers of the pregnane series. 3,842,075, Cl. 260-239.55d.

Gardner-Denver Company: *See*—
Terbrack, William H., 3,842,347.

Garman, Anthony L.: *See*—
Shankwitz, Robert F.; and Garman, Anthony L., 3,841,771.

Garnache, Richard Raymond; and Smith, William Michael, Jr., to International Business Machines Corporation. Integrated circuit fabrication process. 3,841,926, Cl. 148-188.000.

Garner, Derek H.; Bosworth, George H.; and Barker, Roger M., to USM Corporation. Pulling and lasting machines. 3,840,929, Cl. 12-10.100.

Garrett, Walter L., to Dow Chemical Company, The. Method of expanding a resole resin containing expandable thermoplastic microspheres and product obtained therefrom. 3,842,020, Cl. 260-2.50b.

Gartner, Klaus W. Multiple part key for conventional locks. 3,841,120, Cl. 70-395.000.

Gary, Paul Alexander: *See*—
Agraz-Guerena, Jorge; Gary, Paul Alexander; and Lepselter, Martin Paul, 3,841,918.

Gaulocher, Leo P., to Hunter, James T. Golf putter. 3,841,640, Cl. 273-164.000.

Gaylord, John A., to H. Koch & Sons, Inc.; a division of Global Systems, a Gulf & Western Company. Quick release harness. 3,841,666, Cl. 285-33.000.

Gazo, Louis J., Jr.: *See—*
Rion, Richard G.; and Gazo, Louis J., Jr., 3,841,986.

Gazzo, John J., Jr.: *See—*
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, 3,842,218.

GBK Enterprises, Inc.: *See—*
Keller, Howard F., Jr., 3,842,001.

Geach, Charles John: *See—*
Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy, 3,842,014.

Gebr. Dickertmann, Hebezeugfabrik A.G.: *See—*
Klinkhammer, Karl; and Bley, Siegfried, 3,841,441.

Gebruder Buehler A.G.: *See—*
Espeel, Frans Joris, 3,841,065.

Gee, Alan E.; and Snitzer, Elias, to American Optical Corporation. Scanning electron microscope. 3,842,271, Cl. 250-310.000.

Geib, Ralph Larry: *See—*
Glover, Douglas Wade; Kopenhaver, Kenneth Oscar; and Geib, Ralph Larry, 3,842,393.

Geier, Heinz: *See—*
Friese, Karl-Hermann; Geier, Heinz; Pollner, Rudolf; and Schallert, Heino, 3,841,987.

Geiger, David H. Roof construction. 3,841,038, Cl. 52-80.000.

Gem Electro-Magnetics Company, Inc.: *See—*
Barnett, Gerald J., 3,842,379.

Genequand, Pierce, to Battelle Development Corporation. Method and apparatus for measuring, by ionization, the flux of vapour emitted during vacuum vaporization. 3,842,267, Cl. 250-291.000.

General Atomic Company: *See—*
Amtmann, Hans H.; and Macken, Thomas, 3,841,035.
Fortescue, Peter; and Rickard, Corwin L., 3,841,100.

General Battery Corporation: *See—*
Eberle, William J., 3,841,915.

General Cable Corporation: *See—*
Robinson, Daniel E.; and Schmidt, Robert A., 3,841,810.

General Dynamics Corporation: *See—*
Schillreff, George H., 3,841,219.

General Electric Company: *See—*
Barkan, Philip, 3,842,187.
Carlson, Robert G.; and Steinhagen, Carl A., 3,841,942.
Cornell, Edward P., 3,842,268.
Cushing, Donald S.; and Jenkins, Thomas E., 3,841,342.
Ghaem-Maghami, Sanjar; and Holshouser, Howard E., 3,842,201.
Gross, William B., 3,842,350.
Grunewald, Albert L.; and Gunnoe, George H., 3,841,906.
Guth, Lauren W., 3,841,677.
Henderson, David C.; and Maloney, Kenneth M., 3,842,306.
Knox, James D., 3,842,311.
Kornrumpf, William P.; and Harnden, John D., Jr., 3,842,263.
Metro, John G., 3,842,211.
Peroutky, Donald C.; and Stein, Charles R., 3,841,747.
Quirk, John Benjamin, 3,842,361.
Razzano, John S., 3,842,110.
Sargisson, Donald Farley; and Rundell, Dan Joseph, 3,841,091.
Smith, James S., Jr.; and Williams, James W., 3,842,401.
Walden, John P., 3,842,338.
Wentorf, Robert H., Jr., 3,842,164.

General Instrument Corporation: *See—*
Miner, Carroll R., 3,841,164.

General Mills Chemicals, Inc.: *See—*
Minkema, William H.; and Whyzmuzis, Paul D., 3,841,833.

General Motors Corporation: *See—*
Bennett, Ronald W.; and Baber, James R., 3,841,204.
Corrigan, Leo A.; and Spears, Esten W., Jr., 3,841,789.
Ewert, Bruno; and STein, Gunter, 3,841,657.
Hudson, James L.; and Jordan, Larry L., 3,841,261.
Kelso, Albert H., 3,841,723.
Long, George B., 3,842,232.
Lussier, Robert E., 3,841,280.
MacManus, Daniel C., 3,841,793.
Mercer, Robert L., 3,841,675.
Merkle, Ralph H., 3,841,694.
Meyers, Willis G., 3,841,289.
Mick, Stanley H., 3,841,281.
Morgan, Robert E.; and Palma, James D., 3,841,803.
Newsock, Roger L.; and Antrim, Warren W., 3,841,452.
Pionte, Donald M., 3,841,454.
Salamon, Theodore M., 3,841,581.
Saylor, Randall K.; and Knab, Thomas J., 3,841,451.
Schlanzky, Manfred P. H., 3,841,796.
Torosian, Ashod; and Giacoletti, John B., 3,841,841.
Walker, Frank H., 3,841,671.
Williams, Robert G.; and Coolidge, Richard M., 3,841,388.

Genio tools, Inc.: *See—*
Bennett, Gene Lee, 3,841,646.

Genisco Technology Corporation: *See—*
Godinez, Peter A.; and Shepard, Robert R., 3,842,316.

Genova, Inc.: *See—*
Williams, Robert M., 3,841,668.

Georgen, Robert T.; and Dolgen, Igor E., to Character Novelty Company, Inc. Method for manufacturing toy figures. 3,840,974, Cl. 29-434.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,841,187.

Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Method and apparatus for holding sheet material. 3,841,187, Cl. 83-451.000.

Gerber, Hermann, to SAIA AG. FAbrik elektrischer Apparate. Adjustable rotation-controlling device for synchronous motor. 3,842,296, Cl. 310-41.000.

Gerberich, Doanld E., to Borg-Warner Corporation. Vibratory apparatus. 3,841,166, Cl. 74-61.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Huttenbrauck, Herbert; Poklekowski, Helmut; and Soliman, Mustafa, 3,841,706.

Geyer, Manvel A.; Gordon, Frank J.; Lyman, Richard C.; and , to Westinghouse Electric Corporation. Electrical system with programmed computer control and manually initiated control means. 3,842,249, Cl. 235-151.210.

Ghaem-Maghami, Sanjar; and Holshouser, Howard E., to General Electric Company. Beam current limiter. 3,842,201, Cl. 178-7.50r.

Giacoletti, John B.: *See—*
Torosian, Ashod; and Giacoletti, John B., 3,841,841.

Gibson, John James, to RCA Corporation. Telephone image transmission system. 3,842,199, Cl. 178-6.800.

Giersing, Jorgen, to Aktieselskabet de Danske Sukkerfabrikker. Auxiliary screw conveyors. 3,841,908, Cl. 127-5.000.

Gievers, John George. Rotation sensitive retarder. 3,841,758, Cl. 356-106.01r.

Giflo, Henrik; Enekes, Sandor; Zambo, Pal; and Vamosi, Jozsef, to Lenin Kobaszati Muvek. High-strength atmosphere corrosion resistant plate steel. 3,841,866, Cl. 75-124.000.

Gillemot, George W.: *See—*
Anderson, Karl R., 3,842,219.

Gilles, THeodore C., to Lennox Industries, Inc. Air conditioning apparatus. 3,841,393, Cl. 165-22.000.

Gilreath, Arnold A., to Uniroyal Inc. Pneumatic tire. 3,841,373, Cl. 152-209.00b.

Gingher, George C., Jr., to Bethlehem Steel Corporation. Automatic tracking control for looping tower. 3,841,545, Cl. 226-1.000.

Giovanni, Sesto S.: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Nistri, Ugo, 3,842,039.

Girard, Lucien; and Hard, Robert A., to Kennecott Copper Corporation. Stimulation of production well for in situ metal mining. 3,841,705, Cl. 299-4.000.

Gittings, John B.: *See—*
Petersen, Walter F.; and Gittings, John B., 3,841,728.

Glaser, Hermann: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Dyrschka, Helmut, 3,842,015.

Gleason, James D., to Lockheed Aircraft Corporation. Control for impressed current cathodic protection systems. 3,841,988, Cl. 204-196.000.

Globe Universal Sciences, Inc.: *See—*
Barnes, Thomas G., 3,841,984.

Glory Kogyo Kabushiki Kaisha: *See—*
Kaneda, Tadayoshi; and Tanaka, Mitsuaki, 3,841,550.
Kawaski, Sadao; Kaneda, Tadayoshi; and Tanaka, Mitsuaki, 3,841,457.
Kinoshita, Yoshio, 3,841,458.

Gloucester Railway Carriage & Wagon Company: *See—*
Sinclair, Frederick William, 3,841,233.

Glover, Douglas Wade; and Kopenhaver, Kenneth Oscar, to AMP Incorporated. Field repairable high voltage connector. 3,842,389, Cl. 339-60.00m.

Glover, Douglas Wade; and Herrmann, Henry Otto, Jr., to AMP Incorporated. Low cost high voltage connector. 3,842,390, Cl. 339-14.00r.

Glover, Douglas Wade; Kopenhaver, Kenneth Oscar; and Geib, Ralph Larry, to AMP Incorporated. Microminiature multi-pin connector. 3,842,393, Cl. 339-60.00m.

Glowach, Edward R.: *See—*
Howarth, David E.; Teaney, P. La Rue; and Glowach, Edward R., 3,841,265.

Gluck, Eberhard: *See—*
Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, 3,840,928.

Godinez, Peter A.; and Shepard, Robert R., to Genisco Technology Corporation. Transition programmer. 3,842,316, Cl. 317-5.000.

Gogarty, William B.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,841,402.

Gold, James J.: *See—*
Coates, Vincent John; Welter, Leonard M.; and Gold, James J., 3,842,272.

Gold Medal, Inc.: *See—*
Petersen, Walter F.; and Gittings, John B., 3,841,728.

Goldberg, Jacob, to United States Scientific Instruments, Inc. Ringing choke inverter with commutation circuit. 3,842,341, Cl. 321-45.00c.

Goldfarb, Adolph E. Game apparatus and method. 3,841,628, Cl. 273-1.00r.

Goldstein, Seth R., to United States of America, Health, Education and Welfare. Electrode insertion device for neuroelectrical recordings. 3,841,310, Cl. 128-2.10e.

Goodley, George F., to FMC Corporation. Strapping machine feed control. 3,841,213, Cl. 100-4.000.

Goodrich, Robert S. Counterfeit document detector. 3,842,281, Cl. 250-461.000.

Goodyear Tire & Rubber Company: *See*—
Paulin, Kenneth H.; and Wolfe, Merritt W., 3,841,376.

Goodyear Tire & Rubber Company, The: *See*—
Appleby, Paul E.; Braden, William D.; and Vandale, Leonard A., 3,841,033.
McDonald, Edward A., 3,840,971.

Gopperton, ARdath A., to Paymaster Corporation, The. Alarm apparatus for cabinets and the like. 3,842,410, Cl. 340-274.000.

Gordini, Silvano; and Now, Sergio, to Snam Progetti, S.p.A. Process for removing the solvent from solutions of gummy polymers. 3,842,052, Cl. 260-80.780.

Gordon, Frank J.: *See*—
Geyer, Manvel A.; Gordon, Frank J.; Lyman, Richard C.; and , 3,842,249.

Gordon, Richard Lee; and Allen, Errol V., to Battelle Memorial Institute. Double discharge, large volume excitation gas laser. 3,842,366, Cl. 331-94.500.

Gores, Kenneth W. Dispensing pan for aerosol container. 3,841,532, Cl. 222-205.000.

Goshy, Allyn N. Device for monitoring excess current usage based on coulometric cell. 3,842,348, Cl. 324-94.000.

Gould, Douglas E.: *See*—
Young David E.; Gould, Douglas E.; Anderson, Lowell Ray; and Fox, Wiliam B., 3,842,156.

Grabowski, John J.: *See*—
Rambauske, Werner R.; and Grabowski, John J., 3,841,737.

Grafton Furniture Manufacturers Limited: *See*—
Solomons, Alexander, 3,841,618.

Grannis, Charles O., III, to Chance, A. B., Company. Article and screw anchor-supported, load-bearing pad therefor. 3,841,032, Cl. 52-27.000.

Granson, Jean; and Hennemann, Jean, to UNELEC. Combined cut-out switch and circuit breaker. 3,842,380, Cl. 337-6.000.

Grant, Peter M.; Taylor, Robert B.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Thermosetting polyester powder coating compositions. 3,842,021, Cl. 260-15.000.

Graser, Fritz; and Kilpper, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dyes of the perylenetetracarboxylic acid diimide series. 3,842,083, Cl. 260-281.000.

Graser, Fritz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Bis-(dimethyl-meta-sulfonamidophenyl)-imides or perylenes. 3,842,084, Cl. 260-281.000.

Graser, Fritz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Blue anthraquinoid acid dyes. 3,842,101, Cl. 260-372.000.

Gratzmuller, Jean Louis. Circuit-breaker having dielectric liquid under pressure. 3,842,227, Cl. 200-150.00r.

Gravel, Charles R., Jr., to Bendix Corporation, The. Disc brake caliper and anti-rattle support. 3,841,446, Cl. 188-73.500.

Gravis, Charles K., III; and Hodgson, Robert A., to Maloney-Crawford Tank Corporation. Glycol regenerator using controlled gas stripping under vacuum. 3,841,382, Cl. 159-16.00r.

Gray, Basil P., to Commercial Shearing, Inc. Method of bonding urethane elastomers. 3,841,939, Cl. 156-330.000.

Gray, Byron Everett; and Clauer, Egon F. Instep guard for safety footwear. 3,841,004, Cl. 36-72.00r.

Gray, Roy A.: *See*—
Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., 3,842,033.

Great Lakes Carbon Corporation: *See*—
Grindstaff, Lloyd I.; and Whittaker, Mack P., 3,842,165.

Greb, Manfred: *See*—
Lenk, Erich; Busch, Hansjochen; and Greb, Manfred, 3,841,574.

Green, James H., to United States of America, Navy. Circuit breaker assembly with interposed wedge non-conductor and complementary housing arc-prevention structure. 3,842,228, Cl. 200-151.000.

Green, Maurice E., Jr.: *See*—
Farris, Robert E.; and Green, Maurice E., Jr., 3,841,884.

Greene, Richard F.; Schoolar, Richard B.; and Scharnhorst, Peter, to United States of America, Navy. Photoconductively activated gated, infrared charge coupled imaging device (Pagirccd). 3,842,274, Cl. 250-330.000.

Greene, Samuel. Octagonal swimming pool. 3,840,908, Cl. 4-172.190.

Gregory, Francis J., to Garcia Corporation, The. Fishing line. 3,841,015, Cl. 43-44.980.

Gregory, M. Duane; Stolhand, James E.; and Yost, Marvin E., to Continental Oil Company. Pressurized oil-in water monitor. 3,842,270, Cl. 250-301.000.

Gregory, Robert O., to Solitech, Inc. Temperature control system for proportional electric heating. 3,842,243, Cl. 219-497.000.

Gresley, James E. Accessory attaching device. 3,840,944, Cl. 24-73.00r.

Greulic, Robert G.: *See*—
Adams, Kenneth D.; and Greulic, Robert G., 3,841,248.

Greven, Hendrik Marie, to Akzona Incorporated. Psychopharmacologically active tetra-, penta-, hexa-, and hepta-peptides. 3,842,064, Cl. 260-112.500.

Griensteidl, Gerhard; and Michel, Helmut. Rapid shutoff safety valve. 3,841,350, Cl. 137-516.270.

Griffis, William T. Knife sheath assembly. 3,841,541, Cl. 224-2.00d.

Grina, Kenneth I.: *See*—
Broadley, William D.; Grina, Kenneth I.; and Schaub, Carlton H., 3,841,586.

Grindstaff, Donald A.; Steinreich, Joseph S.; and Post, Leo B., to Stauffer Chemical Company. Process for drying mineral containing aqueous protein solutions. 3,840,996, Cl. 34-9.000.

Grindstaff, Lloyd I.; and Whittaker, Mack P., to Great Lakes Carbon Corporation. Manufacture of graphite bodies from high sulfur coke. 3,842,165, Cl. 423-448.000.

Grochowicz, Peter S., 40% to Runyan, Clark M. Apparatus for milk production analysis. 3,841,756, Cl. 356-72.000.

Groningen, Jan Bos. Ventilating cover or mat. 3,840,923, Cl. 5-354.000.

Groothuizen, Theodorus Maria: *See*—
Dijkstra, Fokke Cornelius; Groothuizen, Theodorus Maria; Pasman, Hermanus Johannes; and Van De Putte, Tonny, 3,842,181.

Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, to Boehringer Mannheim GmbH. Apparatus for coating tablets. 3,841,262, Cl. 118-19.000.

Grosbois, Jean; Zimmer, Jean-Claude; and Leroy, Maurice. Rhone-Progil Electrolytic deposition of platinum, iridium and their alloys. 3,841,980, Cl. 204-43.00n.

Gross, John; Kaloci, Andrew; and Lutz, La Verne H., to Gulf & Western Manufacturing Company. Wrapper roll and support assembly for a strip coiling machine. 3,841,131, Cl. 72-148.000.

Gross, William B., to General Electric Company. Combined land line and satellite communication switching system. 3,842,350, Cl. 325-4.000.

Grosse-Holling, Werner; Hapke, Jobst; Hohenhinnebusch, Wilhelm; and Schreiber, Helmut. Method of forming heat exchanger. 3,841,938, Cl. 156-293.000.

Groszek, Aleksander Jerzy: *See*—
Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy, 3,842,014.

Grove, John L., to Fulton Industries, Inc. Aerial platform with side to side rotatable basket. 3,841,436, Cl. 182-2.000.

Grove, Marvin H.; and Kim, Kee W., to M & J Valve Company. Fabricated ball valve. 3,841,601, Cl. 251-315.000.

Groves, Malcolm D., to Combustion Engineering, Inc. Control valve and method. 3,841,202, Cl. 91-471.000.

Grucza, Bernard J. Mold for casting a hydrophilic contact lens blank. 3,841,598, Cl. 249-61.000.

Grune, Heinz: *See*—
Falkner, Raimund; and Grune, Heinz, 3,841,134.

Grunewald, Albert L.; and Gunnoe, George H., to General Electric Company. Method of treating a carbon current collection brush blank and brush resulting therefrom. 3,841,906, Cl. 117-228.000.

GTE Sylvania Incorporated: *See*—
Mallery, Lawrence E.; Arken, Theodore; and Swenson, Henning C., Jr., 3,841,154.

Guardian Electric Manufacturing Company: *See*—
Collette, Ricahrd L., 3,842,375.

Gude, Fritz: *See*—
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,842,046.

Gueldenpfenning, Klaus: *See*—
Russell, Stanley L.; Gueldenpfenning, Klaus; and Pommerening, Uwe A., 3,842,215.

Guest, Robert J., to Halliburton Company. Drilling conditions monitor. 3,841,152, Cl. 73-151.000.

Guilluni, Philips Jeannine: *See*—
Delsa, Marcel; and Guilluni, Philips Jeannine, 3,841,989.

Gulf & Western Manufacturing Company: *See*—
Gross, John; Kaloci, Andrew; and Lutz, La Verne H., 3,841,131.
Snidar, Edward A., 3,841,772.

Gulf Research & Development Company: *See*—
Kehl, William L.; and Rennard, Raymond J., Jr., 3,842,139.
Matthews, Joseph S., 3,841,970.
Wolfe, Court L., 3,841,156.

Gulf Research Development Company: *See*—
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,842,106.

Gunnoe, George H.: *See*—
Grunewald, Albert L.; and Gunnoe, George H., 3,841,906.

Guse, Rudolf Siegfried, to Maschinenfabrik Sack GmbH. Control device with hydraulic synchronising control for forging machines. 3,841,125, Cl. 72-21.000.

Guth, Lauren W., to General Electric Company. Combination latching and switching mechanism. 3,841,677, Cl. 292-335.000.

Gutlbauer, Franz; Meyer, Meinert; and Schlanzke, Claus-Georg, to Schloemann Aktiengesellschaft. Dividing rolled lengths of stock into merchant lengths. 3,841,180, Cl. 83-15.000.

Gutte, Richard: *See*—
Dalibor, Horst; Gutte, Richard; and Stenzel, Gunter, 3,842,133.

Guyton, David L. Zonal focus method for determining the amount of astigmatic correction for an optical system. 3,841,760, Cl. 356-124.000.

Gvang Motor Company Pty. Limited: *See*—
Van Grecken, Gene, 3,841,802.

Gwiazdon, Rodney K.: *See*—
Reid, Francis R.; and Gwiazdon, Rodney K., 3,840,966.

H. Koch & Sons, Inc.; a division of Global Systems, a Gulf & Western Company: *See*—
Gaylord, John A., 3,841,666.

H. R. Electronics Company: *See*—

Levasseur, Joseph L., 3,841,456.
Haas, Warner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., to Xerox Corporation. Liquid crystal imaging system. 3,842,275, Cl. 250-331.000.
Habdas, Edward P.: *See*—
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,841,136.
Habeck, Dietmar A.; and Houlihan, William J., to Sandoz-Wander, Inc. Substituted naphtho pyrazoles. 3,842,088, Cl. 260-296.00t.
Habib, Pierre: *See*—
Friedland, Jacques; and Habib, Pierre, 3,841,041.
Hacker, Leon, to Armco Steel Corporation. Filling an annular space between radially spaced coaxial tubes with foamed cement. 3,841,808, Cl. 425-110.000.
Hackstein, Karl: *See*—
Muller, Henricu ; Pirk, Hans; and Hackstein, Karl, 3,842,155.
Hagener, James L.: *See*—
Church, Herman S.; Hagener, James L.; and Scifres, Zach M., III, 3,841,682.
Haggar Company: *See*—
Off, Joseph W. A.; Wilbanks, Darrel J.; and Willcox, Waid O., 3,841,247.
Hagood, Jerry W.; Shelton, Joe; and Norman, Ralph L. Method for producing a field effect control device. 3,840,955, Cl. 29-25.180.
Hagstrom, Olov; and Riede, Gerhard, to Gambro AG. Dialysis apparatus. 3,841,491, Cl. 210-321.000.
Haldor Frederik Axel Topsoe: *See*—
Jacobsen, Andreas Christian, 3,841,996.
Hall, Gary M., to Westinghouse Electric Corporation. Static plate for power transformers. 3,842,186, Cl. 174-35.0ce.
Hall, James Michael; and Clipp, Louis L., to Exotech, Incorporated. Apparatus for forming high pressurd pulsed jets of liquid. 3,841,559, Cl. 239-101.000.
Hall, John S.: *See*—
Butts, Ernest O.; and Hall, John S., 3,841,597.
Hall, Walter O., to Westinghouse Electric Corporation. Traction drive suspension system for a rail vehicle. 3,841,228, Cl. 105-108.000.
Hallada, Calvin J.: *See*—
Barry, Henry F.; Hallada, Calvin J.; and Moore, Fred W., 3,842,009.
Haller, Albert H.; Larkin, John J.; and Walters, Richard P., to Western Electric Company, Incorporated. Dispensing of viscous material. 3,841,362, Cl. 141-32.000.
Hallgren, Richard C., to Iowa State University Research Foundation, Inc. External inductive neural stimulator system. 3,841,305, Cl. 128-1.300.
Hallgren, Richard C., to Iowa State University Research Foundation, Inc. Implantable, non-contacting nerve stimulating transducer. 3,841,306, Cl. 128-1.500.
Halliburton Company: *See*—
Guest, Robert J., 3,841,152.
Hallicrafters Co., The: *See*—
Dimon, Donald F., 3,842,362.
Hamacher, Wilhelm; and Leinweber, Hubert, to Dunlop Limited. Pneumatic tire having fleece bead reinforcements. 3,841,378, Cl. 152-362.00r.
Hamamoto, Yoshito; and Okada, Tomio, to Kyowa Gas Chemical Industry Co., Ltd. and Sagami Chemical Research Center. Process for purifying diaminomaleonitrile. 3,842,115, Cl. 260-465.50r.
Hamb, Fredrick: *See*—
Wilson, John C.; and Hamb, Fredrick, 3,842,042.
Hambro Structural Systems Limited: *See*—
Butts, Ernest O.; and Hall, John S., 3,841,597.
Hamilton, Frank. Combination clock, bed lamp, radio and tape player. 3,840,924, Cl. 5-317.00r.
Hamilton Tool Company, The: *See*—
Huffman, Harold Walter, 3,841,216.
Hamjian, Harry J., to Carpenter Technology Corporation. Method of making articles from powered material requiring forming at high temperature. 3,841,870, Cl. 75-214.000.
Hammonds, James C.; and O'Leary, Walter E., to ACF Industries, Incorporated. Contour underground mine car. 3,841,236, Cl. 105-364.000.
Handa, Makoto: *See*—
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.
Hans Lingl Anlagenau: *See*—
Kohler, Friedrich, 3,842,257.
Hansen, David A., to Curators of the University of Missouri, The. Product and process for making improved strength dental amalgam. 3,841,467, Cl. 206-219.000.
Hansen, Leslie T.: *See*—
Barrows, John B.; and Hansen, Leslie T., 3,841,482.
Hansford, Rowland C., to Union Oil Company of California. Exhaust gas conversion process and catalyst. 3,842,158, Cl. 423-213.500.
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, to Snow Brand Milk Products Co., Ltd. and Anritsu Electric Co., Ltd. Apparatus for ontinuously automatically controlling the water content of kneaded viscous materials. 3,841,610, Cl. 259-7.000.
Hapke, Donald W.: *See*—
Arnold, Alison M.; Hapke, Donald W.; and Traeger, Frank J., Jr., 3,841,588.
Hapke, Jobst: *See*—
Grosse-Holling, Werner; Hapke, Jobst; Hohenhinnebusch, Wilhelm; and Schreiber, Helmut, 3,841,938.
Happy Horse-Feed Vendors Ltd.: *See*—
Friesen, Nicholas, 3,841,523.
Harada, Suguru; and Kuroyanagi, Moritaka, to Aida Engineering, Ltd. Apparatus for controlling the actuation of an accessory device in an oil pressure actuated press. 3,841,143, Cl. 72-453.000.
Harcuba, Siegfried, to Transglas Patent- und Lizenzverwertungs AG. Method for the continuous production of glass, especially glass possessing a substantially band-shaped gross-sectional configuration. 3,841,857, Cl. 65-94.000.
Hard, Robert A.: *See*—
Girard, Lucien; and Hard, Robert A., 3,841,705.
Harding, Brian: *See*—
Hughes, John M. Kyffin; Harding, Brian; and Lake, Graham Albert John, 3,841,300.
Hardinge Brothers, Inc.: *See*—
Parsons, Hubert J., 3,841,645.
Harendza-Harinxma, Alfred Joseph, 10% to LaPaglia, Samuel A., 10% to Merry, Deane W. and 10% Catanese, Peter J. Filtering material. 3,842,070, Cl. 260-212.000.
Harf, Kenneth Gert, to Singer Company, The. Multiplying integrator circuit. 3,842,310, Cl. 307-228.000.
Harkness, Joseph R., to Briggs & Stratton Corporation. Controlled vibration absorbing mounting for engines. 3,841,425, Cl. 180-53.00r.
Harmon, Richard A., to Continental Oil Company. Subsidence control process for wells penetrating permafrost. 3,841,404, Cl. 166-292.000.
Harnden, John D., Jr.: *See*—
Kornrumpf, William P.; and Harnden, John D., Jr., 3,842,263.
Harnischfeger Corporation: *See*—
Mierendorf, Robert E., 3,842,329.
Harpold, Michael A.; and Atkins, Kenneth E., to Union Carbide Corporation. Insaturated polyester compositions. 3,842,142, Cl. 260-862.000.
Harrell, Melvin R.: *See*—
Thompson, James K.; and Harrell, Melvin R., 3,841,054.
Harrington, Harry L.: *See*—
Erickson, Dennis E.; and Harrington, Harry L., 3,841,442.
Harrington, John H.: *See*—
Novinski, Edward Robert; and Harrington, John H., 3,841,901.
Harris, Joseph E.; and Shaffer, William E., to Stromberg-Carlson Corporation. Operation and release delay circuit. 3,842,323, Cl. 317-141.00s.
Harris, William G., Jr.; and Massaro, Anthony A., Jr., to Westinghouse Electric Corporation. Heat exchanger having a plurality of modular tube bundles. 3,841,271, Cl. 122-32.000.
Harris, William W., Jr., to Harris-Intertype Corporation. Web splicing apparatus. 3,841,944, Cl. 156-504.000.
Harris-Intertype Corporation: *See*—
Harris, William W., Jr., 3,841,944.
Harrison, William A.: *See*—
Ariyan, Zaven S.; and Harrison, William A., 3,842,172.
Hartful, David Carlton Casderbera: *See*—
Mack, Gary Lee; and Hartful, David Carlton Casderbera, 3,840,903.
Hartman, Jack E.: *See*—
Ryan, John W.; Kossoff, Joseph; and Hartman, Jack E., 3,841,020.
Hartman, William R., Jr.: *See*—
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and Mc Carroll, Alan F., 3,841,751.
Hartsog, Dawes Collidge, to Du Pont de Nemours, E. I., and Company. Slub yarn and method of forming a slub yarn. 3,841,078, Cl. 57-139.000.
Harvey, Geoffrey Frank: *See*—
Kuhn, Norbert; and Harvey, Geoffrey Frank, 3,841,132.
Harwood, Robert George; and Hoover, Charles Donald, to AMP Incorporated. Latching system for an electrical connector plug and assembly. 3,842,388, Cl. 339-59.00r.
Hasegawa, Goro: *See*—
Tsunekawa, Tokuichi; Nakamoto, Soichi; and Hasegawa, Goro, 3,842,424.
Hasegawa, Takashi; and Oikawa, Takashi, to Showa Denko Kabushiki Kaisha. Aluminum-silicon-magnesium ternary superplastic alloy and method for manufacture thereof. 3,841,919, Cl. 148-2.000.
Hasegawa, Toru, to Ricoh Co., Ltd. Method and apparatus for control of the supply of ink for offset duplicating machines. 3,841,215, Cl. 101-148.000.
Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., to Westinghouse Electric Corporation. Method of manufacturing and assembling an electric lamp base. 3,840,954, Cl. 29-25.150.
Hashimoto, Kametaro: *See*—
Itaru, Niimi; Hashimoto, Kametaro; Kaneko, Yasuhisa; Komiyama, Yoshiro; and Hashimoto, Kunihiko, 3,841,386.
Hashimoto, Kunihiko: *See*—
Itaru, Niimi; Hashimoto, Kametaro; Kaneko, Yasuhisa; Komiyama, Yoshiro; and Hashimoto, Kunihiko, 3,841,386.
Hashimoto, Nobuyoshi, to Olympus Optical Company, Limited. Apparatus for manufacturing flexible image transfer bundles. 3,840,963, Cl. 29-203.00p.

Haskins, Ralph Newton, to Wepron Products (Proprietary) Limited. Pistol spray protection device simulated. 3,841,526, Cl. 222-79.000.

Hasten, Erwin J., Jr., to Illinois Railway Equipment Co. Retainer key for pedestal side frames. 3,841,230, Cl. 105-221.00k.

Hatcher, John C., to Cole Manufacturing Company. Agricultural planter seed plate. 3,841,522, Cl. 221-265.000.

Hatcher, John C., to Cole Manufacturing Company. Agricultural planter. 3,841,529, Cl. 222-177.000.

Haun, Jack B. Transport system and apparatus therefor. 3,841,511, Cl. 214-516.000.

Hauser, Raimund: *See—*
von Belvard, Peter Revy, 3,841,742.

Hawkins, Harold R. Oil well tooling positioning apparatus and method. 3,840,970, Cl. 29-406.000.

Hawthorne, Vaughn T., to Keystone Industries, Inc. End of car cushioning device. 3,841,496, Cl. 213-43.000.

Hay, Wayne W., to Airco, Inc. Anesthesia ventilator apparatus. 3,841,327, Cl. 128-188.000.

Hayasaki, Naoki: *See—*
Shibukawa, Takashi; Hoten, Masanobu; Hayasaki, Naoki; and Mizutani, Shigeo, 3,841,830.

Hayashi, Hiromichi: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Haynes, Mary B. Bumper jack. 3,841,604, Cl. 254-111.000.

Hazeltine Research, Inc.: *See—*
Loughlin, Bernard D., 3,842,196.

Heathcote, Bernard Vincent: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,842,178.

Heble, Steven J., 20% to Lee, Raymond, Organization, Inc., The. Portable coin operated bank. 3,841,017, Cl. 46-4.000.

Heckmann, Werner; Jordan, Heinz; and Wenker, Heinrich. Container filling system. 3,841,364, Cl. 141-286.000.

Hefele, Josef, to Kufner Textilwerke KG. Process for imparting an anti-felting finish to animal fibres. 3,841,898, Cl. 117-76.00t.

Heffern, Edward W.; Petrille, Dennis G.; and Karll, Robert E., to Standard Oil Company. Sulfonic acid purification. 3,842,095, Cl. 260-327.00s.

Hehl, Karl. Die carrier guiding device for injection molding machine. 3,841,823, Cl. 425-450.100.

Heidrich, Klaus; Kietz, Lothar; and Sziburies, Werner, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Device for turning and transporting heavy workpieces. 3,841,498, Cl. 214-1.0qc.

Heimsport GmbH: *See—*
Vetter, Heinz, 3,841,627.

Hein, Lehmann Aktiengesellschaft: *See—*
Wehner, Albert, 3,841,481.

Heine, Gunter; and Borgonovi, Bruno, to Berger, Gerhard, Fabrik Elektrischer Messgerate. Five-phase stepping motor systems. 3,842,332, Cl. 318-696.000.

Heinemann Electric Company: *See—*
Mune, Charles, 3,842,376.

Heinrich Koppers Gesellschaft mit beschrankter: *See—*
Jakobi, Wilhelm; Schuffler, Arnulf; and Schurhoff, Heinrich, 3,841,975.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, 3,841,977.

Heins, Conrad F.: *See—*
Forler, C. Richard; and Heins, Conrad F., 3,841,932.

Heitman, James M.; and Starr, Earl F., Jr., to United States of America, Air Force. High speed photodiode mount. 3,842,262, Cl. 250-239.000.

Heitmann, Hans-Gunter; Donath, Gerhard; and Beyer, Werner, to Siemens Aktiengesellschaft. Device for purifying the feed water of a steam power installation. 3,841,486, Cl. 210-108.000.

Hejj, Erwin; Sigl, Dieter; and Soddemann, Hans, to Fried, Krupp Gesellschaft mit beschrankter Haftung. Vehicle controlled switch system. 3,841,224, Cl. 104-105.000.

Held, Gerhard R. Tread grinding wheel. 3,841,034, Cl. 51-356.000.

Helminen, Toivo A., to Kimberly-Clark Corporation. Apparatus for stacking flat flexible components. 3,841,500, Cl. 214-6.0fs.

Helsene, Larry E.: *See—*
Christensen, Jeffrey P.; and Helsene, Larry E., 3,842,260.

Hencey, Thomas R., Jr.: *See—*
Boese, Harold L.; and Hencey, Thomas R., Jr., 3,842,333.

Henderlit, James H., III, to Air Knife, Inc. Method for removing heat degradable textile waste material from apparatus used in textile operations. 3,841,911, Cl. 134-37.000.

Henderson, David C.; and Maloney, Kenneth M., to General Electric Company. Alumina coatings for an electric lamp. 3,842,306, Cl. 313-116.000.

Henderson, Jerald M.; and Shawver, Bruce M., to Regents of the University of California, The. Singulator. 3,841,461, Cl. 198-30.000.

Hendrickson, Kenneth E.; Lopour, Warren A.; and Mattson, Larry F., to International Business Machines Corporation. Digital stepping motor control system. 3,842,331, Cl. 318-685.000.

Hendriks, Adrianus Anthonius Maria: *See—*
Van Daelen, Henri Jean Gerard; Hendriks, Adrianus Anthonius Maria; and Koteris, Willem Johannes Jozef, 3,842,313.

Henfrey, Basil, to Duropenta Holdings (Proprietary) Limited. Gutter couplings. 3,841,101, Cl. 61-14.000.

Hennemann, Jean: *See—*
Granson, Jean; and Hennemann, Jean, 3,842,380.

Henniger, Peter Wolfgang, to American Home Products Corporation. Cephalosporanic acid derivatives. 3,842,077, Cl. 260-243.00c.

Hercules Incorporated: *See—*
Keim, Gerald I., 3,842,054.
Kim, Charles W., 3,841,951.

Hermann Maschinenbau GmbH: *See—*
Mahn, Hermann, 3,840,958.

Herrick, Norman A., to Picker Corporation. Protective circuit for limiting the input power applied to an X-ray tube and method of operation. 3,842,280, Cl. 250-401.000.

Herrin, Richard: *See—*
Isaacson, Louis; and Herrin, Richard, 3,842,241.

Herrmann, Heinz: *See—*
Lohr, Bernd; and Herrmann, Heinz, 3,842,038.

Herrmann, Henry Otto, Jr.: *See—*
Glover, Douglas Wade; and Herrmann, Henry Otto, Jr., 3,842,390.

Herscher, Lee R.: *See—*
Dankel, Douglas D.; and Herscher, Lee R., 3,841,571.

Hershman, Alan Abraham: *See—*
Jones, Rodney Charles; and Hershman, Alan Abraham, 3,841,847.

Herz, Andre, to Minigrip, Inc. Apparatus for extruding tubing for fastener bags. 3,841,816, Cl. 425-326.00r.

Hess, Hans, to Rheinstahl Aktiengesellschaft. Dampened locomotive bogie axle. 3,841,232, Cl. 105-224.00r.

Hester, Jackson B., Jr.: *See—*
Gall, Martin; and Hester, Jackson B., Jr., 3,842,090.

Hester, Jackson B., Jr.; and Gall, Martin, to Upjohn Company, The. 4-[α(Phenyl)-0-tolyl]-4H-1,2,4-triazoles. 3,842,089, Cl. 260-296.00r.

Hetherington, Theofore W., to Tenneco Inc. Swaged tri-flow muffler. 3,841,435, Cl. 181-54.000.

Hetrich, Harold Arthur, to Western Electric Company, Incorporated. Fluidic masking. 3,841,930, Cl. 156-16.000.

Hetrick, Richard R.: *See—*
Palazzolo, Salvatore E.; and Hetrick, Richard R., 3,841,956.

Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Certain 2α-(2-hydroxymethyl-2-propylmercapto)-3-amino-azetidin-4-one compounds. 3,842,072, Cl. 260-239.00a.

Hexdall, Andrew M. Packing cutter. 3,840,989, Cl. 30-231.000.

Heye, Hermann: *See—*
Becker, Kurt; and Seidel, Hans-Georg, 3,841,859.

Hick, Robert M., to Du Pont de Nemours, E. I., and Company. Flexible hydrocarbon rubber substrate finished with a thermosetting acrylic enamel. 3,841,895, Cl. 117-72.000.

Hickman, Ronald Price, to Inventec International Limited. Workbenches. 3,841,619, Cl. 269-244.000.

Higginbotham, James M.; and Wardlaw, William G., Sr., to Owens-Corning Fiberglas Corporation. Apparatus for production of thermoplastic materials. 3,841,853, Cl. 65-12.000.

Higginson, Roy C. Tandem axle suspension assembly. 3,841,652, Cl. 280-104.50b.

Higo, Akio: *See—*
Horiuchi, Fukashi; Higo, Akio; and Yoshioka, Hirosuke, 3,842,125.

Higuchi, Aira: *See—*
Okazaki, Kaoru; Higuchi, Aira; and Imaeda, Noaki, 3,841,897.

Higuchi, Takashi: *See—*
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.

Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., to Phelps Dodge Industries, Inc. Dual insulated magnet wire. 3,842,192, Cl. 174-120.0sr.

Hill, William M.: *See—*
Dicks, Peter D. J.; and Hill, William M., 3,841,935.

Hilti Aktiengesellschaft: *See—*
Maier, Elmar, 3,841,474.

Himics, Richard J., to Sun Chemical Corporation. Photopolymerizable copolymeric compositions. 3,842,051, Cl. 260-78.50e.

Hindermann, Peter; and Meindl, Hubert, to Ciba-Geigy AG. Process for the production of acid anthraquinone dyes. 3,842,102, Cl. 260-374.000.

Hines, Burgess W., to Emerson Electric Co. Safety latch for boxes. 3,841,518, Cl. 220-55.00k.

Hirdes, Rudiger. Dispensing device for bulk goods. 3,841,534, Cl. 222-457.000.

Hirokawa, Hideo: *See—*
Izumi, Tadayoshi; Hirokawa, Hideo; and Tsutsui, Toshihiro, 3,840,994.

Hisada, Toshihiko: *See—*
Muto, Kiyoshi; and Hisada, Toshihiko, 3,841,593.

Hitachi, Ltd.: *See—*
Joraku, Masami; Yonekura, Seizi; and Kawano, Shigeyoshi, 3,841,605.
Shida, Shigeru; and Tsumura, Sukebumi, 3,841,124.
Takemoto, Takeo; Tomita, Yoshifumi; Ijichi, Ichiro; and Maeda, Sajiro, 3,841,876.

Hitchiner, Joseph A.; Brown, Lawrence H.; and Blodgett, Monte R., to Edgcome Steel Company. Aftercooler. 3,841,064, Cl. 55-259.000.

Hlinsky, Emil J., to MacLean-Fogg Lock Nut Company. Side frame key for retaining an axle bearing assembly in a railway truck. 3,841,231, Cl. 105-221.000.

Ho, Irving Tze: *See—*

Chen, Tien Chi; and Ho, Irving Tze, 3,842,414.
Hoad Engineers, Incorporated: *See*—
Hoad, John G., 3,841,060.
Hoad, John G., to Hoad Engineers, Incorporated. Gas washer apparatus. 3,841,060, Cl. 55-220.000.
Hobart Manufacturing Company, The: *See*—
Engebretsen, Einar O., 3,841,214.
Hobza, Antonin: *See*—
Kejnovsky, Bohumil; Fikrle, Jan; and Hobza, Antonin, 3,841,115.
Hochman, Jack M.: *See*—
Cohen, Saul J.; and Hochman, Jack M., 3,841,991.
Hochreiter, William T.: *See*—
Craig, Loren J.; and Hochreiter, William T., 3,842,423.
Hodges, Donald W. Registering device. 3,841,217, Cl. 101-413.000.
Hodgson, Robert A.: *See*—
Gravis, Charles K., III; and Hodgson, Robert A., 3,841,382.
Hodogaya Chemical Co., Ltd.: *See*—
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,842,030.
Hoffman, John C. Hand operated catapult toy. 3,841,292, Cl. 124-5.000.
Hoffman, John E.; and Schelich, Ardell J., to Sporlan Valve Company. Refrigerant filter-drier. 3,841,490, Cl. 210-266.000.
Hoffman, Louis S.; and Spruyt, Harry, to Scott Paper Company. Moisture-impermeable package. 3,841,466, Cl. 206-205.000.
Hoffman, Manfred, to Siemens Aktiengesellschaft. Inverter for a load having a parallel resonant circuit. 3,842,339, Cl. 321-44.000.
Hoffman, Norman H., to Technical Ordnance, Inc. Suspension strap cutting apparatus. 3,840,988, Cl. 30-180.000.
Hofmann, Eberhard: *See*—
Staudt, Heinrich; Hofmann, Eberhard; and Djordjevic, Ilija, 3,841,111.
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 16,17-unsaturated steroids. 3,842,105, Cl. 260-397.450.
Hogensen, Philip C., Jr. Ski carrier strap device. 3,841,542, Cl. 224-5.00z.
Hogland, Keith C., to Ford Motor Company. Impact sensor assembly. 3,842,222, Cl. 200-61.440.
Hohenhinnebusch, Wilhelm: *See*—
Grosse-Holling, Werner; Hapke, Jobst; Hohenhinnebusch, Wilhelm; and Schreiber, Helmut, 3,841,938.
Hokari, Saburo: *See*—
Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, 3,841,750.
Hollenbach, Edwin A., to Drexel Industries, Inc. Material handling system. 3,841,503, Cl. 214-75.00r.
Hollingsworth, Delbert L.: *See*—
Sharp, Vance R.; and Hollingsworth, Delbert L., 3,841,260.
Holshouser, Howard E.: *See*—
Ghaem-Maghami, Sanjar; and Holshouser, Howard E., 3,842,201.
Holtkamp, Donald A.; and Chichester, Willard L., to Clark Equipment Company. Hydrostatic propulsion system. 3,841,423, Cl. 180-6.300.
Honeywell Inc.: *See*—
Kelly, Thomas P., 3,842,371.
Pearson, Robert P., 3,841,150.
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, to Rank Xerox, Ltd., mesne. Charge control agents for liquid developers. 3,841,893, Cl. 117-37.01f.
Hoover, Charles Donald: *See*—
Harwood, Robert George; and Hoover, Charles Donald, 3,842,388.
Hopkins, Paul Donald: *See*—
Bertolacini, Ralph J.; Hopkins, Paul Donald; and Menzl, Roland L., 3,841,995.
Hoppenbrouwers, Johannes Josephus Marie, to U.S. Philips Corporation. Method of manufacturing an oxide of yttrium and/or lanthanum and/or the lanthanides. 3,842,012, Cl. 252-301.40r.
Horie, Kiyoshi: *See*—
Terajima, Yasuhiko; Okada, Ryuzo; and Horie, Kiyoshi, 3,841,752.
Horiuchi, Fukashi; Higo, Akio; and Yoshioka, Hirosuke, to Sumitomo Chemical Company, Limited. Process for the production of ( )-trans-chrysanthemic acid. 3,842,125, Cl. 260-514.00h.
Hormel, Geo. A., & Co.: *See*—
Christensen, Jeffrey P.; and Helsene, Larry E., 3,842,260.
Horsewell, Henry George; and Luke, John Anthony, to British-American Tobacco Company Limited. Tobacco-smoke filters. 3,841,338, Cl. 131-261.00b.
Horvath, Richard A.: *See*—
Drozek, Julius S.; Horvath, Richard A.; and Vilagi, Burton J., 3,841,567.
Horwitz, Don A., to Wesco Products Company. Fixture and method for repairing a worn ball on the yoke of a universal joint assembly. 3,841,178, Cl. 82-34.00r.
Hoshino, Shohei, to Asahi-Dow Limited. Apparatus and method for artificial cultivation of shrimp. 3,841,266, Cl. 119-2.000.
Hoten, Masanobu: *See*—
Shibukawa, Takashi; Hoten, Masanobu; Hayasaki, Naoki; and Mizutani, Shigeo, 3,841,830.
Houdaille Industries, Inc.: *See*—
Zalis, Albert A., 3,841,805.
Houlihan, William J.: *See*—
Habeck, Dietmar A.; and Houlihan, William J., 3,842,088.
Hovanchak, John A.: *See*—
Drutchas, Gilbert H.; Spencer, Phillip B.; and Hovanchak, John A., 3,841,804.
Hoven, El Don L.: *See*—
Owen, James; and Hoven, El Don L., 3,842,216.
Hover, Nil Th. Manhole closing arrangement. 3,841,676, Cl. 292-256.500.
Howard, Byron W. Drill bit grinder and refacer. 3,841,026, Cl. 51-71.000.
Howarth, David E.; Teaney, P. La Rue; and Glowach, Edward R., to Xerox Corporation. Developer assembly for electrostatic copier. 3,841,265, Cl. 118-637.000.
Howarth, Richard C.; and Wilson, Eugene M., to Caterpillar Tractor Company. Detachable cutting edge and tip adapter for loader buckets. 3,841,007, Cl. 37-141.00r.
Howell, James A. Boat-trailer. 3,841,662, Cl. 280-414.00a.
Howmedica: *See*—
Dudek, Ronald P.; Kosmos, Peter; and Tesk, John A., 3,841,868.
Howmet Corporation: *See*—
Tingquist, Stanley C.; and Laux, Edward G., 3,841,384.
Hoya Glass Works, Ltd.: *See*—
Asahara, Yoshiyuki; and Izumitani, Tetsuro, 3,841,739.
Hryc, John F., to Dreis & Krump Manufacturing Company. Control system for press brakes and the like. 3,841,140, Cl. 72-441.000.
Hsieh, Henry L., to Phillips Petroleum Company. Polymerization of unsaturated monomers with multilithium initiators. 3,842,145, Cl. 260-879.000.
Huang, Ching Yun; and Fujita, Rokuro, to Japan Gas-Chemical Company, Inc. Process for producing paper-like synthetic resin film. 3,841,903, Cl. 117-138.80f.
Hubert, Bertil Valdemar: *See*—
Brannland, Rolf Carl August; Hultman, Bengt Goran; and Hubert, Bertil Valdemar, 3,842,160.
Hudson, James L.; and Jordan, Larry L., to General Motors Corporation. Self-aligning etch-out spray mask. 3,841,261, Cl. 118-505.000.
Hudson, John Colin, to McConnel, F. W., Limited. Method and apparatus for cutting sugar cane. 3,841,072, Cl. 56-51.000.
Hudspeth, William, to Polaroid Corporation. Folding camera with low cost bellows. 3,842,430, Cl. 354-187.000.
Huffman, Harold Walter, to Hamilton Tool Company, The. Method of and apparatus for correcting deviations in length and registration in a continous strip of material. 3,841,216, Cl. 101-181.000.
Hufford, Billy K. Removable dock. 3,841,104, Cl. 61-48.000.
Huggins, James A., to Med-Pak Corporation. Disposable bedpan. 3,840,906, Cl. 4-112.000.
Hughes Aircraft Company: *See*—
Fong, Timothy T., 3,842,370.
Kuno, Hiromu John, 3,842,292.
Williams, Frederick C., 3,842,417.
Hughes, John M. Kyffin; Harding, Brian; and Lake, Graham Albert John, to Parkinson Cowan Appliances Limited. Heating apparatus. 3,841,300, Cl. 126-91.00a.
Hujer, Friedrich: *See*—
Fergg, Berthold; Zahn, Wolfgang; and Hujer, Friedrich, 3,841,936.
Hultman, Bengt Goran: *See*—
Brannland, Rolf Carl August; Hultman, Bengt Goran; and Hubert, Bertil Valdemar, 3,842,160.
Hundhausen, Eckhard; Cobarg, Claus Christian; and Boehm, Hans-Georg. Electrostatic filter. 3,841,840, Cl. 23-284.000.
Hundstad, Richard L.; and Farish, Owen, to Westinghouse Electric Corporation. Pulse glow generation for laser systems. 3,842,365, Cl. 331-94.500.
Hunnes, Odd Peder: *See*—
Falcone, Francesco; and Hunnes, Odd Peder, 3,841,429.
Hunter, James T.: *See*—
Gaulocher, Leo P., 3,841,640.
Hunter, Lafayette D., to Kudlacek, Donald S. Compound archery bow. 3,841,295, Cl. 124-24.00r.
Hunter, Richard C., to Bailey Meter Company. Differential pressure transmitter overrange protection. 3,841,158, Cl. 73-407.00r.
Huntington, Fred R., to Galigher Company, The. Overhead, extensible sampling device. 3,841,161, Cl. 73-424.000.
Hunziker, Fritz, to Wander Ltd.; a/k/a Wander AG. 4-Piperazinyl-10 H-2 hieno[3,2-c]. 3,842,082, Cl. 260-268-tr.
Hurlbrink, Robert William, III, to Bell Telephone Laboratories, Incorporated. Semiconductor wafer transfer fixture. 3,841,689, Cl. 294-87.00r.
Hutchins, Alma A. Method of piercing holes in sanding discs. 3,840,976, Cl. 29-445.000.
Hutchins, Thomas B., IV. Calibration of electrical blood-pressure monitoring equipment. 3,842,357, Cl. 328-188.000.
Hutson, Thomas, Jr.; and Carter, Cecil O., to Phillips Petroleum Company. HF alkylation of isoparaffin with olefin heavier than ethylene with ethyl fluoride as reaction improver. 3,842,140, Cl. 260-683.510.
Huttenbrauck, Herbert; Poklekowski, Helmut; and Soliman, Mustafa, to Gewerkschaft Eisenhutte Westfalia. Control wall for longwall mining installation. 3,841,706, Cl. 299-34.000.
Huyge, John, to Susan Shoe Industries, Limited. Manufacture of shoes. 3,841,003, Cl. 36-11.500.
Hydrocarbon Research, Inc.: *See*—
Layng, Edwin T., 3,841,981.
Wolk, Ronald H.; and Chervenak, Michael C., 3,842,122.

Hyoky, Rolf, to Kemira Oy. Method of refining the fluorine obtained as a byoproduct in the fertilizer industry. 3,842,161, Cl. 423-339.000.

Iacoviello, John G., to Air Products and Chemicals, Inc. Laminates bonded with adhesive of aqueous emulsion of interpolymer of vinyl acetate, N-methylol acrylamide and acrylic acid. 3,841,960, Cl. 161-251.000.

Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshihiko; Kawase, Kohei; and Tamaru, Kenzi, to Sagami Chemical Research Center. Catalyst for reducing carbon dioxide. 3,842,113, Cl. 260-449.00r.

Ichikawa, Masaru; Naito, Shuichi; Kawase, Kohei; and Tamaru, Kenzi, to Sagami Chemical Research Center. Catalyst for reduction of carbon monoxide. 3,842,121, Cl. 260-449.00r.

Ichinose, Noboru; and Yokomizo, Yuhji. Oxide varistor composition consisting of ZnO; Sb_2O_3 and/or Sb_2O_5; ZrO_2, TiO_2 and/or GeO_2; and Bi_2O_3. 3,842,018, Cl. 252-520.000.

ICI America Inc.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,841,402.
Restaino, Alfred J.; and Bristowe, William W., 3,841,401.

Ijichi, Ichiro: *See—*
Takemoto, Takeo; Tomita, Yoshifumi; Ijichi, Ichiro; and Maeda, Sajiro, 3,841,876.

Ikegai Tekko Kabushiki Kaisha: *See—*
Izumi, Tadayoshi; Hirokawa, Hideo; and Tsutsui, Toshihiro, 3,840,994.

Illinois Railway Equipment Co.: *See—*
Hasten, Erwin J., Jr., 3,841,230.

Illinois Railway Equipment Company: *See—*
Smith, Edward Payson; and Nadherny, Rudolph E., 3,841,229.

Imae, Yoshio: *See—*
Sato, Katsuo; and Imae, Yoshio, 3,842,032.

Imaeda, Noaki: *See—*
Okazaki, Kaoru; Higuchi, Aira; and Imaeda, Noaki, 3,841,897.

Immethun, Peter A.: *See—*
Niebylski, Leonard M.; and Immethun, Peter A., 3,842,159.

Imodco, Inc.: *See—*
Reid, William R., Jr., 3,840,927.

Imperial Chemical Industries Limited: *See—*
Browne, Anthony Arthur Briarly; and McIntyre, James Eric, 3,842,040.
Browne, Anthony Arthur Briarly; and McIntyre, James Eric, 3,842,041.
Dixon, David Rodney; Turton, Cecil Nigel; and Williams, Ian Gabriel, 3,842,026.

Imris, Pavel. Apparatus for producing ozone. 3,842,286, Cl. 250-535.000.

Inagaki, Yasuhiko: *See—*
Kishimoto, Kenichi; Miyauchi, Hiroshi; Inagaki, Yasuhiko; and Fujimoto, Joji, 3,841,835.

Industrial Nucleonics Corporation: *See—*
Varner, Donald E., 3,841,337.

Ingenjorsfirman Gradient, Birgit and Harry Rilbe: *See—*
Pettersson, Jarl Sune, 3,841,762.

Inland Steel Company: *See—*
Natzke, Richard E., 3,841,135.

Inoue, Toshiyuki: *See—*
Katagiri, Toru; Ito, Akio; and Inoue, Toshiyuki, 3,841,735.

Interactive Systems, Inc.: *See—*
Edwin, Allan I.; Vlach, Thomas L.; and Bennett, Melvin T., 3,841,149.

Intermenua (Proprietary) Limited: *See—*
Van Zyl, Josias, 3,841,183.

International Business Machines Corporation: *See—*
Argyle, Bernell E.; and Di Stefano, Thomas H., 3,842,407.
Chen, Tien Chi; and Ho, Irving Tze, 3,842,414.
Ett, Allen Harold; and Rosenbaum, Walter Steven, 3,842,402.
Garnache, Richard Raymond; and Smith, William Michael, Jr., 3,841,926.
Hendrickson, Kenneth E.; Lopour, Warren A.; and Mattson, Larry F., 3,842,331.
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., 3,842,405.
Krause, K. A.; and Moradazeh, Yaqub, 3,841,892.
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, 3,840,978.
Sherk, Thomas A.; and Tummala, Rao R., 3,841,883.
Srinivasan, Rangaswamy, 3,842,364.

International Computers Limited: *See—*
Crook, Keith Jeremy, 3,842,404.

International Harvester Company: *See—*
Scarnato, Thomas J.; Cicci, George B.; and Meyer, Martin H., 3,841,070.

International Paper Company: *See—*
Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., 3,841,620.

International Standard Electric Corporation: *See—*
Barselloti, John Anthony; Laliccia, Federico Riccardo; and Litster, John Fraser, 3,842,206.

International Telephone and Telegraph Corporation: *See—*
Miller, Harlan E., 3,842,212.
Rabow, Gerald, 3,842,420.

Interroyal Corporation: *See—*
Benoit, Roland A.; and Duprey, Richard H., 3,840,911.

Interstate Drop Forge Co.: *See—*
Ellinghausen, Edgar A.; and Johnson, George B., 3,842,239.

Inventec International Limited: *See—*
Hickman, Ronald Price, 3,841,619.

Iovine, Carmine P.: *See—*
Thompson, James M.; Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,841,902.

Iowa State University Research Foundation, Inc.: *See—*
Hallgren, Richard C., 3,841,305.
Hallgren, Richard C., 3,841,306.

IS Incorporated Systems Company: *See—*
Meckler, Gershon, 3,841,206.

Isaacson, Louis; and Herrin, Richard, to Biozonics Corporation. Electrically heater aquarium tank. 3,842,241, Cl. 219-311.000.

Isabell, Walter J.: *See—*
Kramb, Kenneth D.; and Isabell, Walter J., 3,841,656.

ISC Smelting Limited: *See—*
Benatt, Frank George Simon; and Gammon, Michael William, 3,841,862.

Isen, Allan A.: *See—*
O'Driscoll, Kenneth F.; and Isen, Allan A., 3,841,985.

Iserson, Hyman: *See—*
Villa, Jose L.; and Iserson, Hyman, 3,842,053.

Ishibashi, Akichika: *See—*
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,841,352.

Ishiguro, Toshihiro: *See—*
Kawashima, Kenya; and Ishiguro, Toshihiro, 3,842,091.

Ishii, Hiroshi: *See—*
Kashio, Yukio; and Ishii, Hiroshi, 3,842,230.

Ishii, Shoichi: *See—*
Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, 3,841,966.

Ishii, Tatsuo: *See—*
Saito, Kunio; Ishii, Tatsuo; and Seta, Shigetoshi, 3,842,029.

Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, to Ricoh Co., Ltd. Electrophotographic transfer-printing device. 3,841,750, Cl. 355-3.00r.

Itai, Reiichi; and Kanai, Hideo, to Japan Carlit Co., The. Surface preparation process for recoating of used coated metallic electrodes. 3,841,983, Cl. 204-146.000.

Itaru, Niimi; Hashimoto, Kametaro; Kaneko, Yasuhisa; Komiyama, Yoshiro; and Hashimoto, Kunihiko. Method of joining a beryllium workpiece to light metals. 3,841,386, Cl. 164-75.000.

Itaya, Toshihisa: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.

Itek Corporation: *See—*
Ebersole, John F., 3,841,733.
MacGovern, Alan J.; and O'Brien, John A., 3,842,261.

Ito, Akio: *See—*
Katagiri, Toru; Ito, Akio; and Inoue, Toshiyuki, 3,841,735.

Ito, Akira, to Tokyo Shibaura Electric Company, Ltd. Fastening device. 3,841,193, Cl. 85-9.00r.

Ito, Kazuo: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Kawashima, Masao, 3,842,043.

Ito, Masaru: *See—*
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.

Itoi, Kazuo: *See—*
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.

ITT Industries, Inc.: *See—*
Seip, Hermann, 3,841,713.

Iwakawa, Tsunektyo; and Yano, Akira, to Nippon Electric Company, Limited. Drive circuit for plasma display panel comprising means for placing pedestal on alternating firing pulses. 3,842,314, Cl. 315-169.0tv.

Iwao, Kumiry Roy, to Varian Associates. Automatic sampler apparatus. 3,841,160, Cl. 73-422.0gc.

Iwasaki, Yukio: *See—*
Nakamura, Takezo; and Iwasaki, Yukio, 3,841,239.

Iwata, Tadao: *See—*
Tomatu, Toshiharu; and Iwata, Tadao, 3,842,147.

Izumi, Tadayoshi; Hirokawa, Hideo; and Tsutsui, Toshihiro, to Ikegai Tekko Kabushiki Kaisha. Method and device of automatic measurement for use with a numerically-controlled lathe. 3,840,994, Cl. 33-174.0pc.

Izumitani, Tetsuro: *See—*
Asahara, Yoshiyuki; and Izumitani, Tetsuro, 3,841,739.

Jackson, William E.; and Becker, James M., to Moment monitoring system for hydraulic-piston type cranes. . 3,841,493, Cl. 212-39.000.

Jackson, Winston J., Jr.: *See—*
Grant, Peter M.; Taylor, Robert B.; and Jackson, Winston J., Jr., 3,842,021.

Jacobs, Cornelis Adrianus Joannes: *See—*
Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, 3,842,304.

Jacobs, Jacobus Hubertus: *See—*
Van Esdonk, Johannes; and Jacobs, Jacobus Hubertus, 3,842,308.

Jacobsen, Andreas Christian, to Haldor Frederik Axel Topsoe. Hydrodesulphurization process. 3,841,996, Cl. 208-112.000.

Jacobson, Norman: *See*—
Pappas, James J.; Jacobson, Norman; and Kresge, Edward N., 3,842,010.

Jahn, Reinhardt H., to Chicago Metallic Corporation. Concealed grid system. 3,841,048, Cl. 52-732.000.

Jakel, Gus R., to California Cement Shake Co., Inc. Cementitious roofing and siding. 3,841,885, Cl. 106-93.000.

Jakeman, Eric; Jones, Robin; and Oliver, Christopher John, to National Research Development Corporation. Optical signal processing. 3,842,252, Cl. 235-181.000.

Jakobi, Wilhelm; Schuffler, Arnulf; and Schurhoff, Heinrich, to Heinrich Koppers Gesellschaft mit beschrankter. Horizontal coke oven with variable burners along the flue lenght. 3,841,975, Cl. 202-139.000.

James, Kenneth E., to Stressed Pipe Research, Inc. Reinforcing cage. 3,841,356, Cl. 138-175.000.

Janninck, Donald R. Powder feeder. 3,841,530, Cl. 222-189.000.

Janssen, Paul Adriaan Jan: *See*—
Soudijn, Willem; van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, 3,842,076.

Janssen Pharmaceutica N.V.: *See*—
Soudijn, Willem; van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, 3,842,076.

Japan Carlit Co., The: *See*—
Itai, Reiichi; and Kanai, Hideo, 3,841,983.

Japan Exlan Company, Limited: *See*—
Shibukawa, Takashi; Hoten, Masanobu; Hayasaki, Naoki; and Mizutani, Shigeo, 3,841,830.

Japan Gas-Chemical Company, Inc.: *See*—
Huang, Ching Yun; and Fujita, Rokuro, 3,841,903.

Jaras, Anthony. Apparatus for installing hammers in musical instrument. 3,841,191, Cl. 84-453.000.

Jarrett, E. K.: *See*—
Scott, Donald C., deceased, 3,841,469.

Jarrett, Noel: *See*—
Russell, Allen S.; Jarrett, Noel; and Stoup, Philip T., 3,842,163.

Jarvik, Robert K. Repeating ligature guns, multi-ligature cartridges and preformed ligatures therefor. 3,841,521, Cl. 221-75.000.

Jayachandra, Yemmanur, to Western Electric Company, Incorporated. Infrared scanning apparatus using a plurality of parallel detectors. 3,842,277, Cl. 250-341.000.

Jefferson Chemical Company, Inc.: *See*—
Schulze, Heinz; and Marquis, Edward Thomas, 3,842,081.

Jenkins, Thomas E.: *See*—
Cushing, Donald S.; and Jenkins, Thomas E., 3,841,342.

Jennings, Luree C. Infant support. 3,840,916, Cl. 5-327.000.

Jensen, Jack. Airplane hijacking injector. 3,841,328, Cl. 128-218.00f.

Jepson, John W.; Lyon, Herbert W.; and Brown, Robert A., to Acushnet Company. Golf ball dimple milling apparatus. 3,841,199, Cl. 90-13.00c.

Jester Company Limited, The: *See*—
Ellis, Shirley Russell, 3,841,475.

Jewell, Edward S.: *See*—
Rootsey, James V., 3,842,421.

Jin, Jung Il, to Stauffer Chemical Company. Fire retardant crosslinked copolymers. 3,842,048, Cl. 260-78.5bb.

Joerns Furniture Company: *See*—
Damico, Frank M., 3,840,910.

John Lysaght (Australia) Limited: *See*—
Kuhn, Norbert; and Harvey, Geoffrey Frank, 3,841,132.

Johns-Manville Corporation: *See*—
Periat, Douglas Marion; and Oster, David Lawrence, 3,841,854.

Johnson, Alan W.: *See*—
Troutner, Arthur L.; Russell, John R.; Johnson, Alan W.; and Johnson, Clifford R., 3,841,945.

Johnson, Clarence R.; and Kidder, Jay T. Arm rest. 3,841,702, Cl. 297-416.000.

Johnson, Clifford R.: *See*—
Troutner, Arthur L.; Russell, John R.; Johnson, Alan W.; and Johnson, Clifford R., 3,841,945.

Johnson, Daniel B., to Anaconda Company, The. Glass insulated magnet wire. 3,842,193, Cl. 174-120.00c.

Johnson, Frank B.: *See*—
Pepe, David L.; Palm, Theodore O.; and Johnson, Frank B., 3,841,575.

Johnson, George B.: *See*—
Ellinghausen, Edgar A.; and Johnson, George B., 3,842,239.

Johnson, Ivan E., to Docutel Corporation. Inertia switching. 3,841,225, Cl. 104-130.000.

Johnson, Jesse Ronald. Trailer deck. 3,841,036, Cl. 52-28.000.

Johnson, Paul Richard: *See*—
Kircik, Willis James; Rothrock, Elmer Weyman; and Johnson, Paul Richard, 3,841,253.

Johnson Rubber Company, The: *See*—
Forschner, Andrew C., 3,841,818.

Jones, Augustin. Inflatable leakage inhibitor. 3,841,304, Cl. 128-1.00r.

Jones, Claude R.: *See*—
Berta, Michael A.; and Jones, Claude R., 3,842,284.

Jones, Harley W.: *See*—
Cuevas, John W.; and Jones, Harley W., 3,841,082.

Jones, John B., Jr.; and Reeves, Adam A., to Paraho Corporation. Method for retorting hydrocarbonaceous solids. 3,841,992, Cl. 208-11.000.

Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, to Abbott Laboratories. 4"-Deoxy-4"-oxoerythromycin B derivatives. 3,842,069, Cl. 260-210.00e.

Jones, Robin: *See*—
Jakeman, Eric; Jones, Robin; and Oliver, Christopher John, 3,842,252.

Jones, Rodney Charles; and Hershman, Alan Abraham, to British Non-Ferrous Metals Research Association, The. Chromium alloys containing Y_2O_3 and aluminium or silicon. 3,841,847, Cl. 29-182.500.

Jones, Thomas. Safety device for vehicles. 3,841,432, Cl. 180-91.000.

Jones, William E.: *See*—
Chance, Ronald E.; and Jones, William E., 3,842,063.

Joraku, Masami; Yonekura, Seizi; and Kawano, Shigeyoshi, to Hitachi, Ltd. Moving apparatus for a load. 3,841,605, Cl. 254-127.000.

Jordan, Heinz: *See*—
Heckmann, Werner; Jordan, Heinz; and Wenker, Heinrich, 3,841,364.

Jordan, Larry L.: *See*—
Hudson, James L.; and Jordan, Larry L., 3,841,261.

Joseph Lucas (Industries) Limited: *See*—
Bottoms, Harry Simister, 3,841,670.
Thompson, Michael Ainley; and Phillips, Brian Leslie, 3,841,238.

Joyce, Jerry Ray: *See*—
Pinkham, Jesse R.; Cockman, Arthur G.; and Joyce, Jerry Ray, 3,841,071.

Juhlin, Lars-Erik: *See*—
Ekstrom, Ake; Juhlin, Lars-Erik; and Olsson, Karl-Erik, 3,842,337.

Jun, Hung Won: *See*—
Luzzi, Louis Anthony; Whitworth, Clyde Weydell; and Jun, Hung Won, 3,842,170.

Jureit, John Calvin, to Automated Building Components, Inc. Two-sided fastener. 3,841,195, Cl. 85-13.000.

Jurmo, Michael W.: *See*—
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,841,136.

K. I. C. Incorporated: *See*—
Kramb, Kenneth D.; and Isabell, Walter J., 3,841,656.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See*—
Heidrich, Klaus; Kietz, Lothar; and Sziburies, Werner, 3,841,498.

Kabushiki Kaisha Daini Seikosha: *See*—
Komaki, Shojiro, 3,841,081.

Kabushiki Kaisha Hattori Tokeiten: *See*—
Kitai, Kiyoshi, 3,842,425.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Atsuta, Hisayoshi; Ueda, Teiji; and Koezuka, Yokichi, 3,841,142.

Kabushiki Kaisha Koparu: *See*—
Kikuchi, Tomio, 3,841,087.

Kabushiki Kaisha Suwa Seikosha: *See*—
Akahane, Tatsuro, 3,841,085.
Kasai, Masami; and Kishida, Motoki, 3,841,848.
Naito, Okito, 3,842,411.

Kaczerofsky, Rupert: *See*—
Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, 3,842,055.

Kagawa, Hiroshi; and Senoo, Keiji, to Yuasa Battery Company, Limited. Sodium sulfur storage battery. 3,841,912, Cl. 136-6.0fs.

Kahmann, Albrecht, to Escher Wyss G.m.b.H.. Grinding apparatus for fibrous material. 3,841,573, Cl. 241-245.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Farris, Robert E.; and Green, Maurice E., Jr., 3,841,884.

Kaiser, Elmer Robert. Process and apparatus for the gasification of organic matter. 3,841,851, Cl. 48-111.000.

Kajima Corporation: *See*—
Muto, Kiyoshi; and Hisada, Toshihiko, 3,841,593.

Kalle Aktiengesellschaft: *See*—
Lohr, Bernd; and Herrmann, Heinz, 3,842,038.

Kaloci, Andrew: *See*—
Gross, John; Kaloci, Andrew; and Lutz, La Verne H., 3,841,131.

Kalvoda, Jaroslav: *See*—
Anner, Georg; and Kalvoda, Jaroslav, 3,842,074.

Kampe, Klaus-Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Preparation of beta-halogenoalkyl isocyanates. 3,842,109, Cl. 260-453.00p.

Kanai, Hideo: *See*—
Itai, Reiichi; and Kanai, Hideo, 3,841,983.

Kanbar, Maurice S.: *See*—
Wilder, Joseph R.; and Kanbar, Maurice S., 3,841,331.

Kanebo, Ltd.: *See*—
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,842,049.

Kaneda, Tadayoshi: *See*—
Kawaski, Sadao; Kaneda, Tadayoshi; and Tanaka, Mitsuaki, 3,841,457.

Kaneda, Tadayoshi; and Tanaka, Mitsuaki, to Glory Kogyo Kabushiki Kaisha. Theftproof coin receptacle for coin-operated apparatus. 3,841,550, Cl. 232-15.000.

Kaneko, Yasuhisa: *See*—
Itaru, Niimi; Hashimoto, Kametaro; Kaneko, Yasuhisa; Komiyama, Yoshiro; and Hashimoto, Kunihiko, 3,841,386.

Kansas State University Research Foundation: *See*—
Lambert, Jack L.; and Tschorn, Reginald R., 3,841,765.
Karelitz, Judith. Image producing device. 3,841,730, Cl. 350-5.000.
Karll, Robert E.: *See*—
Heffern, Edward W.; Petrille, Dennis G.; and Karll, Robert E., 3,842,095.
Karlsson, Signar, to Allmanna Svenska Elektriska Aktiebolaget. Lifting device for bales. 3,841,688, Cl. 294-67.00r.
Kartridg Pak Co., The: *See*—
Engelhardt, John Nicol; and Rousseau, Roy Settle, 3,841,569.
Kasai, Masami; and Kishida, Motoki, to Kabushiki Kaisha Suwa Seikosha. Hard watch case comprising TiN, T, and at least one of Mn, Al and V. 3,841,848, Cl. 29-182.500.
Kashio, Yukio; and Ishii, Hiroshi, to Casio Computer Co., Ltd. Push-button switch with coil sprint contact. 3,842,230, Cl. 200-276.000.
Kataeva, Galina Vasilievna: *See*—
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.
Katagiri, Toru; Ito, Akio; and Inoue, Toshiyuki, to Sankyo Kogaku Kogyo Kabushiki Kaisha. Zoom lens system operable for extremely short distance photography. 3,841,735, Cl. 350-187.000.
Katcha, Frank F.: *See*—
Dieringer, Andrew M.; and Katcha, Frank F., 3,841,221.
Kato, Satoru; and Tayama, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Electric vacuum cleaner. 3,841,067, Cl. 55-300.000.
Kato, Tojo: *See*—
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.
Katzke, Ernest F., to Crane Packaging Company. Apparatus for handling workpieces to be polished. 3,841,028, Cl. 51-125.000.
Kaufmann, Edward A. Bicycle securing device. 3,841,119, Cl. 70-58.000.
Kawa, Ryuichi, to Ricoh Co., Ltd. Magnetic tape driving system. 3,841,583, Cl. 242-201.000.
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, to Kuraray Co., Ltd. Process for preparing 2,3,5-trimethyl hydroquinone. 3,842,130, Cl. 260-621.00h.
Kawano, Shigeyoshi: *See*—
Joraku, Masami; Yonekura, Seizi; and Kawano, Shigeyoshi, 3,841,605.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Okuno, Ryuzo, 3,841,614.
Kawase, Kohei: *See*—
Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshiliiko; Kawase, Kohei; and Tamaru, Kenzi, 3,842,113.
Ichikawa, Masaru; Naito, Shuichi; Kawase, Kohei; and Tamaru, Kenzi, 3,842,121.
Kawashima, Kenya; and Ishiguro, Toshihiro. Dibenzoxirenazepine derivatives. 3,842,091, Cl. 260-348.00c.
Kawashima, Masao: *See*—
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Kawashima, Masao, 3,842,043.
Kawaski, Sadao; Kaneda, Tadayoshi; and Tanaka, Mitsuaki, to Glory Kogyo Kabushiki Kaisha. Device for automatic collection of coins in coin-operated apparatus. 3,841,457, Cl. 194-1.00a.
Kawasski, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera flash controls with internal light detection. 3,842,428, Cl. 354-145.000.
Kaye, Morton; and Radlauer, Marvin I., said Kaye assor. to said Radlauer, Marvin I. Portable microfilm viewer. 3,841,745, Cl. 353-26.000.
Kearney & Trecker Corporation: *See*—
Kielman, Ervin J.; and Currer, John T., 3,840,981.
Kearney National Inc.: *See*—
Landis, Alfred R., 3,840,969.
Kehl, William L.; and Rennard, Raymond J., Jr., to Gulf Research & Development Company. Dehydrogenation of paraffins over a platinum magnesium aluminate spinel. 3,842,139, Cl. 260-683.300.
Keim, Gerald I., to Hercules Incorporated. Vinyl-type addition polymers containing a plurality of tertiary nitrogens quaternized with an epihalohydrin. 3,842,054, Cl. 260-86.10n.
Kejnovsky, Bohumil; Fikrle, Jan; and Hobza, Antonin, to ELITEX-Závody Textilniho Strojirenstvi Generalni reditelstvi. Method of knitting an anti-ladder stitch course. 3,841,115, Cl. 66-172.00r.
Keller, Howard F., Jr., to GBK Enterprises, Inc. Method for extracting retained oil and solids from a filter media and separating the same. 3,842,001, Cl. 210-23.000.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Using sonic vibrations to produce a radially uniform resistance characteristic in a semiconductor crystal. 3,841,845, Cl. 23-301.0sp.
Kelley, Winfield L. Modular insulated heating element supports. 3,842,244, Cl. 219-550.000.
Kellogg, Walter J.: *See*—
Taylor, Glenn R.; and Kellogg, Walter J., 3,842,343.
Kelly, Thomas P., to Honeywell Inc. Voltage to frequency coverter. 3,842,371, Cl. 331-143.000.
Kelsey-Hayes Company: *See*—
Rinker, Kurt H., 3,841,445.
Stelzer, William, 3,841,711.
Kelso, Albert H., to General Motors Corporation. Railway bearing seal. 3,841,723, Cl. 308-187.100.
Kemira Oy: *See*—
Hyoky, Rolf, 3,842,161.
Kemp, Horace N.: *See*—
Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., 3,841,620.
Kennametal Inc.: *See*—
Kniff, Thomas J.; and Leibee, Donald L., 3,841,707.
Kniff, Thomas J.; Leibee, Donald L.; and Oaks, Seibert S., 3,841,708.
Kniff, Thomas J., 3,841,709.
Kennecott Copper Corporation: *See*—
Girard, Lucien; and Hard, Robert A., 3,841,705.
Kent, Joseph B. Roll off container. 3,841,505, Cl. 214-83.300.
Kermode, David W., to United States of America, Navy. Optical contrast enhancement system. 3,841,734, Cl. 350-166.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Overhoff, Theodor; and Stupp, Hermann-Josef, 3,841,757.
Kerr-McGee Chemical Corporation: *See*—
Lai, San-Cheng, 3,841,978.
Kertel, Stanley S., to Eastman Kodak Company. Silver halide emulsion containing ketomethylene photographic color-forming couplers. 3,841,880, Cl. 96-100.000.
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., to International Business Machines Corporation. Communications control unit. 3,842,405, Cl. 340-172.500.
Keystone Industries, Inc.: *See*—
Hawthorne, Vaughn T., 3,841,496.
Khrundzhe, Viktor Mikhailovich: *See*—
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich, 3,841,923.
Kidder, Jay T.: *See*—
Johnson, Clarence R.; and Kidder, Jay T., 3,841,702.
Kielman, Ervin J.; and Currer, John T., to Kearney & Trecker Corporation. Tool change arm grip. 3,840,981, Cl. 29-568.000.
Kieronski, John P., to Leiendecker, William F., Sr. Machine for bending the end portions of wires. 3,841,361, Cl. 140-73.000.
Kiesling, Casper, 20% to Lee, Raymond, Organization, Inc., The. Prefabricated insulated wall with electrical circuit components housed therein. 3,842,320, Cl. 317-99.000.
Kietz, Lothar: *See*—
Heidrich, Klaus; Kietz, Lothar; and Sziburies, Werner, 3,841,498.
Kikuchi, Tomio, to Kabushiki Kaisha Koparu. In-operation indicating device for clocks. 3,841,087, Cl. 58-152.00h.
Killinger, Fred M., to Upjohn Company, The. Compact syringe. 3,841,329, Cl. 128-220.000.
Kilpper, Gerhard: *See*—
Graser, Fritz; and Kilpper, Gerhard, 3,842,083.
Kim, Charles W., to Hercules Incorporated. Nonwoven fabrics. 3,841,951, Cl. 161-57.000.
Kim, Kee W.: *See*—
Grove, Marvin H.; and Kim, Kee W., 3,841,601.
Kimar Corporation: *See*—
Martin, Charles K., 3,841,303.
Kimberly-Clark Corporation: *See*—
Helminen, Toivo A., 3,841,500.
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, to Kanebo, Ltd. Method of producing an improved polycarbonamide by incorporating therein a chlorohydrin ether or derivative thereof. 3,842,049, Cl. 260-78.00r.
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, to Freudenberg, Carl, Firma. Fusible interlining. 3,841,952, Cl. 161-88.000.
Kimura, Yoskio: *See*—
Sato, Jutaro, 3,840,936.
Kingdom Hockings, Michael L.: *See*—
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., 3,842,405.
Kinney, Gary W. Device for spoking and alignment of wire wheels. 3,841,379, Cl. 157-1.500.
Kinoshita, Yoshio, to Glory Kogyo Kabushiki Kaisha. Rental Locker system. 3,841,458, Cl. 194-32.000.
Kinsella, Howard R.; and Smith, Carl A., to Emerson Electric Co. Manifold valve for domestic gas ovens. 3,841,552, Cl. 236-99.000.
Kircik, Willis James; Rothrock, Elmer Weyman; and Johnson, Paul Richard, to Chicago Bridge & Iron Company. Horizontal support system for ship tanks for low temperature liquefied gas. 3,841,253, Cl. 115-74.00r.
Kirker, Alton Everett, Jr., to Sealol, Inc. Rotary mechanical fluid seal. 3,841,642, Cl. 277-40.000.
Kirkman, Earl L.: *See*—
Olson, Donald M., 3,841,318.
Kiselev, Valentin Dmitrievich: *See*—
Mironov, Ivan Antonovich; Nikitin, Vladislav Iosifovich; and Kiselev, Valentin Dmitrievich, 3,841,006.
Kishida, Motoki: *See*—
Kasai, Masami; and Kishida, Motoki, 3,841,848.

Kishimoto, Kenichi; Miyauchi, Hiroshi; Inagaki, Yasuhiko; and Fujimoto, Joji, to Yanagimoto Seisakusho Co., Ltd. Means for providing an information signal of sample introduction in apparatus for chemical analysis. 3,841,835, Cl. 23-253.00r.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Apparatus enlarging the range of exposure time control. 3,842,425, Cl. 354-51.000.

Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Focal plane shutter blade arrangement and support. 3,842,429, Cl. 354-250.000.

Kitrilakis, Sotiris; and Robinson, Thomas C., to Tecna Corporation. Oxygenator. 3,841,837, Cl. 23-258.500.

Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., to Production Technology Inc. Method and apparatus for flash removal from heat and pressure welded articles. 3,841,201, Cl. 90-24.00a.

Klaren, Cornelis H. J., to Shell Oil Company. Powder coating composition. 3,842,035, Cl. 260-47.0en.

Klaus, Kaspar. Trafficable surface for mechanical parking apparatus, ramps lifting platforms or the like. 3,841,776, Cl. 404-41.000.

Klein, Lawrence N.; and Wallens, William R., to Century-Niagara Corporation. Multiple automatic washer system. 3,841,116, Cl. 68-12.00r.

Kleindinst, Edgar L.: *See—*
Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., 3,841,826.

Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung: *See—*
Schlunke, Jurgen, 3,841,963.

Klinkhammer, Karl; and Bley, Siegfried, to Gebr. Dickertmann, Hebezeugfabrik A.G. Apparatus for raising and lowering heavy loads. 3,841,441, Cl. 187-1.00r.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Koenig, Walter; and Adams, Heribert, 3,841,415.

Knab, Thomas J.: *See—*
Saylor, Randall K.; and Knab, Thomas J., 3,841,451.

Knaebel, Thomas C.; and Birk, Douglas G. Finned heat exchanger and system. 3,841,396, Cl. 165-44.000.

Knapsack Aktiengesellschaft: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Dyrschka, Helmut, 3,842,015.

Kneuer, Joseph George; and Lawless, William Joseph, to Bell Telephone Laboratories, Incorporated. Repetitive byte recognition circuit. 3,842,399, Cl. 340-146.1ba.

Kniepkamp, Alberto E.; and Wangard, William, to Chicago Musical Instrument Co. Musical instrument having automatic arpeggio system. 3,842,184, Cl. 84-1.010.

Kniff, Thomas J.; and Leibee, Donald L., to Kennametal Inc. Cutter chain with staggered bits. 3,841,707, Cl. 299-84.000.

Kniff, Thomas J.; Leibee, Donald L.; and Oaks, Seibert S., to Kennametal Inc. Excavating tool device. 3,841,708, Cl. 299-86.000.

Kniff, Thomas J., to Kennametal Inc. Excavating tool arrangement. 3,841,709, Cl. 299-88.000.

Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., to ICI America Inc. Fracturing with radiation-induced polymers. 3,841,402, Cl. 166-247.000.

Knox, George P., to Dow Chemical Company, The. Apparatus for dispersing effluent gas into the atmosphere. 3,841,208, Cl. 98-58.000.

Knox, James D., to General Electric Company. S-corrected vertical deflection circuit. 3,842,311, Cl. 315-27.0td.

Knox Manufacturing Company: *See—*
Zinn, Robert W., 3,841,594.

Koba, Sadaaki: *See—*
Shimoda, Noboru; and Koba, Sadaaki, 3,842,282.

Kobe Steel, Inc.: *See—*
Minami, Toshihiro; and Shiina, Akito, 3,841,126.

Kobe Steel, Limited: *See—*
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, 3,841,129.

Koehler, Waldemar; Riedel, Oswald; Scherer, Herbert; and Schlereth, Georg, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Reaction vessel for isothermal calorimetry. 3,841,155, Cl. 73-190.00r.

Koenig, Walter; and Adams, Heribert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Draft vehicle and hitch structure for connecting the vehicle to an implement. 3,841,415, Cl. 172-439.000.

Koezuka, Yokichi: *See—*
Atsuta, Hisayoshi; Ueda, Teiji; and Koezuka, Yokichi, 3,841,142.

Koff, Fred W.: *See—*
Fuhrmann, Robert; Koff, Fred W.; and Sifniades, Stylianos, 3,842,073.

Kohaut, John E., to Raceway Components, Inc., mesne. Positive clamping service unit. 3,841,673, Cl. 285-210.000.

Kohler, Friedrich, to Hans Lingl Anlagenau and Verfahrenstechnik KG. Alternating light barrier. 3,842,257, Cl. 250-206.000.

Kohler, Robert D.; Sidlauskas, David P.; and Walton, Charles A., to Proximity Devices, Inc. Recognition and identification system with noise rejection capabilities. 3,842,246, Cl. 235-61.11h.

Kojima, Koichi: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.

Kolell, Norbert C. Method and apparatus for numerical control of members independently movable along coincident axes. 3,842,330, Cl. 318-574.000.

Kolk, Stephen B.: *See—*
Platner, Warren; Whitwam, Ronald L.; Kolk, Stephen B.; and Ursul, Earl G., 3,841,704.

Kolodziej, Andrew S. Line handling device. 3,841,685, Cl. 294-19.00r.

Komaki, Shojiro, to Kabushiki Kaisha Daini Seikosha. Electronic watch with a time display correcting device. 3,841,081, Cl. 58-23.00r.

Komatsubara, Saburo: *See—*
Chibata, Ichiro; Kosumi, Masahiko; Komatsubara, Saburo; and Sugiura, Masaki, 3,841,968.

Komiyama, Yoshiro: *See—*
Itaru, Niimi; Hashimoto, Kametaro; Kaneko, Yasuhisa; Komiyama, Yoshiro; and Hashimoto, Kunihiko, 3,841,386.

Kondo, Toshihiko: *See—*
Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshihiko; Kawase, Kohei; and Tamaru, Kenzi, 3,842,113.

Konopka, John G., to Warwick Electronics, Inc. Optical remote control system. 3,842,403, Cl. 340-170.000.

Kopenhaver, Kenneth Oscar: *See—*
Glover, Douglas Wade; and Kopenhaver, Kenneth Oscar, 3,842,389.
Glover, Douglas Wade; Kopenhaver, Kenneth Oscar; and Geib, Ralph Larry, 3,842,393.

Kopp, Keith A., to Eagle Monitor Systems. Method and apparatus for continuously monitoring heartbeat rate. 3,841,315, Cl. 128-2.06f.

Koppelmann, Eldo K., to Amtel, Inc. Self-sizing furnishing tool. 3,840,957, Cl. 29-90.00r.

Koppelmann, Eliahu: *See—*
Scherhab, Berng; Koppelmann, Eliahu; Wolz, Hermann; and Francque, Marc, 3,842,098.

Koppen, Dirk Jan; and Metz, Hendrik Theodoor. Control and regulator device for a load-independent regulated hydraulic system. 3,841,096, Cl. 60-462.000.

Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. Molded opto-electronic transducer. 3,842,263, Cl. 250-239.000.

Korteling, Aart Gerrit, to U.S. Philips Corporation. Ignition system for internal combustion engines. 3,841,288, Cl. 123-148.00e.

Korting, Reinhard, to Polysius AG. Traveling grate for heat treating materials. 3,841,829, Cl. 432-245.000.

Kosmos, Peter: *See—*
Dudek, Ronald P.; Kosmos, Peter; and Tesk, John A., 3,841,868.

Kossoff, Joseph: *See—*
Ryan, John W.; Kossoff, Joseph; and Hartman, Jack E., 3,841,020.

Kosumi, Masahiko: *See—*
Chibata, Ichiro; Kosumi, Masahiko; Komatsubara, Saburo; and Sugiura, Masaki, 3,841,968.

Koteris, Willem Johannes Jozef: *See—*
Van Daelen, Henri Jean Gerard; Hendriks, Adrianus Anthonius Maria; and Koteris, Willem Johannes Jozef, 3,842,313.

Kovach, James T.; and Paluszny, Antoni, to Ford Motor Company. Thrust bearing assembly. 3,841,720, Cl. 308-9.000.

Koyama, Mitsuo: *See—*
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,842,429.

Kozlovsky, Vikto Stepanovich: *See—*
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.

Kramb, Kenneth D.; and Isabell, Walter J., to K. I. C. Incorporated. Vehicle cable cutting device. 3,841,656, Cl. 280-150.00r.

Kraus, Charles Edward, to Excelermatic, Inc. Turbine drive. 3,841,173, Cl. 74-751.000.

Krause, K. A.; and Moradazeh, Yaqub, to International Business Machines Corporation. Method for transferring developed image. 3,841,892, Cl. 117-17.500.

Krauss, Paul; and Fetzer, Gustav, to Zinser-Textilmaschinen GmbH. Spindle arrangement. 3,841,077, Cl. 57-135.000.

Krawczak, Lawrence: *See—*
Brown, Martin M.; and Krawczak, Lawrence, 3,841,044.

Kresge, Edward N.: *See—*
Pappas, James J.; Jacobson, Norman; and Kresge, Edward N., 3,842,010.

Krish, Kris S., to Dravo Corporation. Method for precipitating copper. 3,841,865, Cl. 75-109.000.

Krock, Richard H.: *See—*
Larsen, Earl I.; and Krock, Richard H., 3,841,846.

Kropp, James E., to Minnesota Mining and Manufacturing Company. Use of sulfonic acid salts in cationic polymerization. 3,842,019, Cl. 260-2.0ep.

Kruiswijk, Franciscus Josephus, to Nederlands Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid. Transporter for conveying large living organisms under substantially sterile conditions. 3,841,324, Cl. 128-132.000.

Krupp, Fried. Gesellschaft mit beschrankter Haftung: *See—*
Kutscher, Gerhard; Droge, Josef; Wehling, Rolf; and Neubert, Rolf, 3,841,075.
Wachendorf, Friedrich; Winkler, Alois; Twillman, Dieter; and Neubert, Rolf, 3,841,074.

Krygowski, Richard P., to Ford Motor Company. Exhaust gas heated engine intake manifolding and fuel vaporizer. 3,841,284, Cl. 123-122.00a.

Kucera, Josef: *See—*
Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, 3,842,151.

Kudlacek, Donald S.: *See—*
Hunter, Lafayette D., 3,841,295.

Kufner Textilwerke KG: *See—*
Hefele, Josef, 3,841,898.

Kuhn, Norbert; and Harvey, Geoffrey Frank, to John Lysaght (Australia) Limited. Method of flattening metal strip exhibiting a discontinuous yield point and suppressing the discontinuous yield point. 3,841,132, Cl. 72-163.000.

Kumagai Gumi Company Limited: *See—*
Matsushita, Kunijiro, 3,841,421.

Kuno, Hiromu John, to Hughes Aircraft Company. Microwave power modulator/leveler control circuit. 3,842,292, Cl. 307-271.000.

Kuraray Co., Ltd.: *See—*
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, 3,842,144.

Kuroyanagi, Moritaka: *See—*
Harada, Suguru; and Kuroyanagi, Moritaka, 3,841,143.

Kurvin, Charles: *See—*
Liefeld, Gustav; and Kurvin, Charles, 3,842,400.

Kusakabe, Noboru: *See—*
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.

Kushida, Kazuhiko. Rotary valve. 3,841,347, Cl. 137-242.000.

Kuss, R. L., and Co., Inc.: *See—*
Combest, John F.; and Kuss, Ralph L., 3,841,489.

Kuss, Ralph L.: *See—*
Combest, John F.; and Kuss, Ralph L., 3,841,489.

Kusters, Norbert L.: *See—*
Cox, Louis G.; Kusters, Norbert L.; and MacMartin, Malcolm P., 3,842,349.

Kutscher, Gerhard; Droge, Josef; Wehling, Rolf; and Neubert, Rolf, to Krupp, Fried. Gesellschaft mit beschrankter Haftung. Opening-up drum for an open end spinning device. 3,841,075, Cl. 57-58.910.

Kyowa Gas Chemical Industry Co., Ltd.: *See—*
Hamamoto, Yoshito; and Okada, Tomio, 3,842,115.

L. B. Foster Company: *See—*
Richeson, Harold E., 3,841,222.

La Bianco, Richard A. Water bed and support therefor. 3,840,921, Cl. 5-348.0wb.

Labarre, Maurice. Machine for producing perforated sleeves. 3,841,815, Cl. 425-290.000.

Lacey, Edward H. Controllable water turbine motor for irrigation machine. 3,841,561, Cl. 239-189.000.

Lacroix, Armand Jean-Baptiste: *See—*
Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, 3,841,565.

Lacy, Mount, Enterprises Inc.: *See—*
Lacy, Mount Lee, 3,841,740.

Lacy, Mount Lee, to Lacy, Mount, Enterprises Inc. Changeable fluid filter eyeglasses. 3,841,740, Cl. 351-44.000.

Lagarde, Jean-Louis, to Compagnie Industrielle des Telecommunications. Analog-digital convertor of the re-circulation type. 3,842,413, Cl. 340-347.00d.

Lai, San-Cheng, to Kerr-McGee Chemical Corporation. Method of treating a titanium anode. 3,841,978, Cl. 204-29.000.

Lake, Graham Albert John: *See—*
Hughes, John M. Kyffin; Harding, Brian; and Lake, Graham Albert John, 3,841,300.

Laliccia, Federico Riccardo: *See—*
Barselloti, John Anthony; Laliccia, Federico Riccardo; and Litster, John Fraser, 3,842,206.

Lamb, John T., to Tappan Company, The. Microwave oven defrost circuit. 3,842,233, Cl. 219-10.550.

Lambert, Edward Henry: *See—*
Michael, Tantrimudalige Anthony Don; and Lambert, Edward Henry, 3,841,319.

Lambert, Jack L.; and Tschorn, Reginald R., to Kansas State University Research Foundation. Microdiffusion cell. 3,841,765, Cl. 356-246.000.

Lambert, Maurice: *See—*
Leblond, Jean; Danneels, Guy; and Lambert, Maurice, 3,841,941.

Lancsek, Thomas Stephen: *See—*
Feldstein, Nathan; and Lancsek, Thomas Stephen, 3,841,881.

Land, Edwin H., to Polaroid Corporation. Diffusion transfer processing composition container with colloidal silica viscosity increasing agent. 3,841,879, Cl. 96-76.00c.

Landis, Alfred R., to Kearney National Inc. Clamp stick. 3,840,969, Cl. 29-278.000.

Laner, Gary J. Pipe plugging tool. 3,841,355, Cl. 138-89.000.

Lang, Clifford H.: *See—*
Coffey, James M.; and Lang, Clifford H., 3,841,449.

Langdon, Michael J.: *See—*
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and Mc Carroll, Alan F., 3,841,751.

Langen & Co.: *See—*
Strauff, Gunther, 3,841,653.

Langestein & Schemann Aktiengesellschaft: *See—*
Bachmann, Horst, 3,841,139.

Langwell, John D. Reversible locking paper clip. 3,840,943, Cl. 24-67.900.

Lanzenberger, Horst. Multi-step transmission with an indexing disk. 3,841,170, Cl. 74-473.00r.

LaPaglia, Samuel A.: *See—*
Harendza-Harinxma, Alfred Joseph, 3,842,070.

Laporte, Jean Michel; and Laporte, Jean-Claude. Clay pigeon dispensing apparatus. 3,841,293, Cl. 124-8.000.

Laporte, Jean-Claude: *See—*
Laporte, Jean Michel; and Laporte, Jean-Claude, 3,841,293.

Larkin, John J.: *See—*
Haller, Albert H.; Larkin, John J.; and Walters, Richard P., 3,841,362.

Larralde, Edward; and Robinson, Glenn, to Vetco Offshore Industries, Inc. Hydraulic motion compensating apparatus. 3,841,607, Cl. 254-172.000.

Larsen, Earl I.; and Krock, Richard H., to Mallory, P. R., & Co., Inc. Liquid phase sintered molybdenum base alloys having additives and shaping members made therefrom. 3,841,846, Cl. 29-182.000.

Larson, Russell W. Sailboat. 3,841,251, Cl. 114-39.000.

Laszlo, Andrew. Sharpener device. 3,841,030, Cl. 51-170.0pt.

Laurent, Henry: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,842,105.

Laurenti, Italo Marco Levi. Multi-thickness plastic handled scissors. 3,840,990, Cl. 30-341.000.

Lausen, Verne H.: *See—*
Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., 3,842,192.

Laux, Edward G.: *See—*
Tingquist, Stanley C.; and Laux, Edward G., 3,841,384.

Lavergne, Justin: *See—*
Edeline, Jean-Claude; and Lavergne, Justin, 3,842,285.

Lawler, Harry A., to Carborundum Company, The. Compressed rigid laminated material including stitching reinforcement. 3,841,954, Cl. 161-50.000.

Lawless, William Joseph: *See—*
Kneuer, Joseph George; and Lawless, William Joseph, 3,842,399.

Layfield, James D.: *See—*
Benzing, Willaim M.; and Layfield, James D., 3,841,165.

Layman, Melvin M.: *See—*
Vedvik, Andrew H.; and Layman, Melvin M., 3,841,820.

Layng, Edwin T., to Hydrocarbon Research, Inc. Hydrogenation of tar sand bitumen. 3,841,981, Cl. 208-48.00q.

Le Nickel: *See—*
Rey, Maurice; and Formanek, Victor, 3,841,864.

Leavitt, Richard I.: *See—*
Chen, Nai Yuen; Leavitt, Richard I.; and Coty, Vernon F., 3,841,972.

Leblond, Jean; Danneels, Guy; and Lambert, Maurice, to Uniroyal. Apparatus for servicing a tire building machine. 3,841,941, Cl. 156-406.000.

Lechler Apparatebau KG: *See—*
Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, 3,840,928.

Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., to International Paper Company. Web folding apparatus and method. 3,841,620, Cl. 270-40.000.

Lee, Charles D., Jr.: *See—*
Ford, Maynard; and Lee, Charles D., Jr., 3,841,076.

Lee, Raymond, Organization, Inc., The: *See—*
Detko, Mildred A., 3,840,909.
Heble, Steven J., 3,841,017.
Kiesling, Casper, 3,842,320.
Middleton, Kenneth, 3,840,919.
Renna, Fernando, 3,841,630.
Taylor, Alexander R., 3,841,553.

Leeds, Winthrop M., to Westinghouse Electric Corporation. High voltage circuit breaker utilizing insertion of a fixed resistance during opening and closing. 3,842,225, Cl. 200-144.0ap.

LegEtronics Inc.: *See—*
Shida, Junji, 3,841,351.

Lehtonen, Lasse, to Oy Tampella AB. Automatic guide for roll, 3,841,722, Cl. 308-59.000.

Lehureau, Jean: *See—*
Rieux, Jean Philippe; and Lehureau, Jean, 3,842,024.

Leibee, Donald L.: *See—*
Kniff, Thomas J.; and Leibee, Donald L., 3,841,707.
Kniff, Thomas J.; Leibee, Donald L.; and Oaks, Seibert S., 3,841,708.

Leibson, Irving: *See—*
McDonald, George K.; Douglas, Robert M.; and Leibson, Irving, 3,842,060.

Leiendecker, William F., Sr.: *See—*
Kieronski, John P., 3,841,361.

Leight, Howard S. Hard hat ear protector. 3,841,326, Cl. 128-152.000.

Leinweber, Hubert: *See—*
Hamacher, Wilhelm; and Leinweber, Hubert, 3,841,378.

Lemelson, Jerome H. Magnetic tape transducing system. 3,842,432, Cl. 360-105.000.

Lemelson, Jerome H. Magnetic tape device and transducing method. 3,842,433, Cl. 360-105.000.
Lenin Kobaszati Muvek: *See*—
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; and Vamosi, Jozsef, 3,841,866.
Lenk, Erich; Busch, Hansjochen; and Greb, Manfred, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Winder device for synthetic threads. 3,841,574, Cl. 242-18.0dd.
Lennox Industries, Inc.: *See*—
Gilles, THeodore C., 3,841,393.
Leonard, James H., to Square D Company. Plug-on distribution panel with retaining means for both small and large circuit breakers. 3,842,322, Cl. 317-119.000.
Leonard, Ralph W., to United States Steel Corporation. Minimizing crazing of hot-dip aluminum coatings. 3,841,894, Cl. 117-50.000.
Leonard, Verna M. Chord transposing and fingering dial. 3,841,192, Cl. 84-485.000.
Lepselter, Martin Paul: *See*—
Agraz-Guerena, Jorge; Gary, Paul Alexander; and Lepselter, Martin Paul, 3,841,918.
Leroy, Maurice: *See*—
Grosbois, Jean; Zimmer, Jean-Claude; and Leroy, Maurice, 3,841,980.
Leslie, Donald J. Pulsato generation system. 3,842,204, Cl. 179-1.00j.
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Ferromagnetic chromium dioxide crystals and magnetic recording medium containing same. 3,841,907, Cl. 117-234.000.
Levasseur, Joseph L., to H. R. Electronics Company. Control circuit for vending and other coin controlled devices. 3,841,456, Cl. 194-1.00n.
Lever Brothers Company: *See*—
Block, Max; and Watson, Charles Andrew, 3,842,167.
Levy, Max, & Co., Inc.: *See*—
Coale, Edgar B., 3,842,202.
Lewis, Donald J., to Allied Chemical Corporation. Vehicle safety system. 3,841,654, Cl. 280-150.0ab.
Lewis, Robert E., to Timelapse, Inc. Method and apparatus for monitoring and correlating visible environmental contamination. 3,841,763, Cl. 356-207.000.
Leyendecker, Helmut: *See*—
Dobrusskin, Alexander; and Leyendecker, Helmut, 3,842,307.
Liang, Charles C.: *See*—
Boyle, Gerard H.; Epstein, James; and Liang, Charles C., 3,841,914.
Libers, Roland; and Smalling, Claude W., Jr., to Monsanto Company. Selective hydrogenation of C acetylenic hydrocarbons. 3,842,137, Cl. 260-681.50r.
Liberty Industries, Inc.: *See*—
Cooper, Raymond Edward, 3,841,828.
Lichtenstein, Ivan E.: *See*—
Armistead, William H.; Elmer, Thomas H.; and Lichtenstein, Ivan E., 3,842,017.
Liebl, Helmuth; and Rasskopf, Klaus, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. v. Mass spectrometer of high detection efficiency. 3,842,269, Cl. 250-298.000.
Liefeld, Gustav; and Kurvin, Charles, to Messerschmitt Bolkow-Blohm GmbH. Method and circuit arrangement for decoding and correcting information transmitted in a convolutional code. 3,842,400, Cl. 340-146.1aq.
Lightkep, William E.: *See*—
Fuller, Ross; Munshower, Kenneth; and Lightkep, William E., 3,841,472.
Lilja, Duane F. Spray apparatus and method. 3,841,555, Cl. 239-8.000.
Lilly, Eli, and Company: *See*—
Chance, Ronald E.; and Jones, William E., 3,842,063.
Lincoln, Frank H., Jr., to Upjohn Company, The. 15-methoxy PGE_2. 3,842,118, Cl. 260-468.00d.
Lindelow, Claes-Goran: *See*—
Englund, Gosta Roland; Lundell, Bjorn Sture; and Lindelow, Claes-Goran, 3,841,341.
Linker Machines, Inc.: *See*—
Berg, Rudolph; Bantel, Otto; and Taylor, Howard D., 3,840,937.
Lion Precision Corporation: *See*—
Michelson, Louis, 3,841,153.
Lipe Rollway Corporation: *See*—
Mead, Dennis E., 3,841,471.
Lippmann, Inc.: *See*—
Tome, Larry D., 3,841,464.
Lipps, Edwin Alvin. Method of making a magnetic recording head. 3,840,984, Cl. 29-603.000.
Litster, John Fraser: *See*—
Barsellotti, John Anthony; Laliccia, Federico Riccardo; and Litster, John Fraser, 3,842,206.
Little, Carl H., to Weber-Knapp Company. Follower rod latching device. 3,841,767, Cl. 402-61.000.
Litton Systems Inc.: *See*—
Coutant, Ralph W.; and Schlueter, Frederick, 3,841,721.
Llewellyn, Rees Jenkin: *See*—
Raw, Peter Michael; and Llewellyn, Rees Jenkin, 3,842,185.
Lo, Ching-Tsan; Miller, Joe Jed; and Cywinski, Norbert Francis, to El Paso Products Company. Dehydrogenation of olefinic hydrocarbons. 3,842,132, Cl. 260-669.00r.
Lockheed Aircraft Corporation: *See*—
Boggs, Wilburn A.; and Miller, Robert N., 3,841,896.
Gleason, James D., 3,841,988.
Lockwood, Geroge H. Automatic reset reversing mechanism for sprinklers. 3,841,563, Cl. 239-230.000.
Lockwood, John C., to Scripto, Inc. Receptacle and plug. 3,841,517, Cl. 220-40.00r.
Loev, Bernard: *See*—
Brenner, Martin; and Loev, Bernard, 3,842,173.
Lohbauer, Kenneth R.: *See*—
Ferre, Glenn E.; Franz, Maurice F.; Lohbauer, Kenneth R.; and McMillan, William D., 3,841,795.
Lohkamp, Dwight Theodore; and Prentice, James S., to Esso Research and Engineering Company. Nonwoven mats of thermoplastic blends by melt blowing. 3,841,953, Cl. 161-150.000.
Lohr, Bernd; and Herrmann, Heinz, to Kalle Aktiengesellschaft. Photoconductive polymeric condensation products of formaldehyde with a multi-nuclear carbocyclic aromatic compound. 3,842,038, Cl. 260-67.00a.
Lombard, Claude Edmond, to Regie Nationale Des Usines Renault and Automobiles Peugeot. Devices for sensing the speed and position of an engine flywheel. 3,842,299, Cl. 310-168.000.
Long, Alden Owen, Jr., to AMP Incorporated. Bobbin terminal insertion machine. 3,840,964, Cl. 29-203.00d.
Long, George B., to General Motors Corporation. Oven temperature limiter. 3,842,232, Cl. 219-5.300.
Lopour, Warren A.: *See*—
Hendrickson, Kenneth E.; Lopour, Warren A.; and Mattson, Larry F., 3,842,331.
Lorber, Herbert W. Radar cross-section measurement apparatus. 3,842,418, Cl. 343-55.00a.
Lorenzo, Phyllis Kay. Snowman feature and accessory system. 3,841,019, Cl. 46-16.000.
Loubier, Robert J. Method of making an integral magnetic rotor and sear. 3,842,148, Cl. 264-24.000.
Loughley, William A.: *See*—
Weatherhead, Albert J., III; and Loughley, William A., 3,841,053.
Loughlin, Bernard D., to Hazeltine Research, Inc. System for transmission of auxiliary information in a video spectrum. 3,842,196, Cl. 358-12.000.
Lovelace, Michael N. G.: *See*—
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., 3,842,405.
Lowe, Frederick G., to Universal Oil Products Company. Vehicle seats. 3,841,703, Cl. 297-445.000.
LTV Aerospace Corporation: *See*—
Clark, Herbert, 3,841,089.
Lucas Aerospace Limited: *See*—
Appleby, Brian Lawrence; Malpass, Alan; and Ellis, Kenneth Harold, 3,841,589.
Lucas Electrical Company Limited, The: *See*—
Bird, Stephen James, 3,842,223.
Smith, Roger Victor Frederick, 3,842,301.
Lucas, Jean Louis. Apparatus for wrapping stacked compressible materials in a thermo-shrinkable plastics film. 3,840,997, Cl. 34-66.000.
Lucke, Heinz; Schredl, Konrad; and Boy, Peter, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method of knitting stocking toe closure. 3,841,113, Cl. 66-95.000.
Ludewig, Manfred; and Romer, Hans-Konrad, to Rheinstahl AG. Control arrangement, especially for diesel engine. 3,841,291, Cl. 123-198.0db.
Ludwig, Taprogge Reinigungsanlagen fur Rohren-Warmeaustauscher: *See*—
Eimer, Klaus, 3,841,397.
Ludwig, Vernon A., to Valmat Signs & Signals Ltd. Liquid filled display apparatus. 3,841,010, Cl. 40-137.000.
Luke, John Anthony: *See*—
Horsewell, Henry George; and Luke, John Anthony, 3,841,338.
Luke, William George; and Datson, David Pender, to English Clays Lovering Pochin & Company Limited. Swivel joints for pipes. 3,841,669, Cl. 285-98.000.
Lukitsch, Joseph: *See*—
Andros, Andrew; and Lukitsch, Joseph, 3,841,726.
Lumb, John B.; and Edwards, Michael, to BBA Group Limited. Friction material. 3,842,031, Cl. 260-38.000.
Lund, Kerry G.; and Porter, Leo A., to Pic-A-Tent-Top Carrier, Inc. Lifting apparatus. 3,841,603, Cl. 254-4.00r.
Lundberg, Robert D.; and Makowski, Henry S., to Esso Research and Engineering Company. Fabrication process for multiphased plastics. 3,842,154, Cl. 264-294.000.
Lundell, Bjorn Sture: *See*—
Englund, Gosta Roland; Lundell, Bjorn Sture; and Lindelow, Claes-Goran, 3,841,341.
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., to Eastman Kodak Company. Apparatus for the production of condensation polymers. 3,841,836, Cl. 23-253.00a.
Lussier, Robert E., to General Motors Corporation. Valve rocker arm and pivot assembly. 3,841,280, Cl. 123-90.390.
Lutz, La Verne H.: *See*—
Gross, John; Kaloci, Andrew; and Lutz, La Verne H., 3,841,131.
Luzzi, Louis Anthony; Whitworth, Clyde Weydell; and Jun, Hung Won, to Research Corporation. Solubilized aspirin. 3,842,170, Cl. 424-234.000.

Lyman, Richard C.: *See—*
Geyer, Manvel A.; Gordon, Frank J.; Lyman, Richard C.; and 3,842,249.
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, to International Business Machines Corporation. Method for positioning and bonding. 3,840,978, Cl. 29-493.000.
Lyon, Herbert W.: *See—*
Jepson, John W.; Lyon, Herbert W.; and Brown, Robert A., 3,841,199.
Lysaght, John (Australia) Limited: *See—*
North, Mark, 3,840,952.
Lytle, Walter J.: *See—*
Schuster, Marvin A.; and Lytle, Walter J., 3,840,982.
M & J Valve Company: *See—*
Grove, Marvin H.; and Kim, Kee W., 3,841,601.
M&L Aquatics: *See—*
Miller, Jack Vernon, 3,841,267.
M&T Chemicals Inc.: *See—*
Arcilesi, Donald A., 3,841,979.
Mac Arthur, Donald Morley; and Skurkiss, Peter Kenny, to Bell Telephone Laboratories, Incorporated. Mild acid etch for tungsten. 3,841,931, Cl. 156-18.000.
Mac Millan Bloedel Limited: *See—*
Procter, Alan R.; Styan, Garrick E.; and Vinje, Magnus G., 3,841,962.
Mac Pherson, Douglas E.: *See—*
Robinson, Roland L.; Boltz, Chadwick C.; Everson, Evan P.; and Mac Pherson, Douglas E., 3,841,584.
MacCone, Paul L. Hanger. 3,841,540, Cl. 223-87.000.
MacGovern, Alan J.; and O'Brien, John A., to Itek Corporation. Optical encoder using diffraction imagery in a reflective mode. 3,842,261, Cl. 250-231.0se.
Machlett Laboratories Incorporated, The: *See—*
Braun, Martin, 3,842,305.
Mack, Gary Lee; and Hartful, David Carlton Casderbera. Belt. 3,840,903, Cl. 2-338.000.
Macken, Thomas: *See—*
Amtmann, Hans H.; and Macken, Thomas, 3,841,035.
MacLean-Fogg Lock Nut Company: *See—*
Hlinsky, Emil J., 3,841,231.
MacManus, Daniel C., to General Motors Corporation. Motor-pump system for preventing a vapor lock. 3,841,793, Cl. 417-45.000.
MacMartin, Malcolm P.: *See—*
Cox, Louis G.; Kusters, Norbert L.; and MacMartin, Malcolm P., 3,842,349.
Maddux, John F.: *See—*
Froberg, Magnus L.; and Maddux, John F., 3,842,180.
Maeda, Riichi. Deflector for abrasive-accelerator in blasting machine. 3,841,025, Cl. 51-9.000.
Maeda, Sajiro: *See—*
Takemoto, Takeo; Tomita, Yoshifumi; Ijichi, Ichiro; and Maeda, Sajiro, 3,841,876.
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, to Hodogaya Chemical Co., Ltd. Process for preparing colored synthetic leather. 3,842,030, Cl. 260-37.00n.
Magill, John W. Current stabilizing means for island airport foundations. 3,841,103, Cl. 61-46.000.
Mahn, Hermann, to Hermann Maschinenbau GmbH. Calender rolls. 3,840,958, Cl. 29-110.000.
Maier, Elmar, to Hilti Aktiengesellschaft. Nail holder assembly. 3,841,474, Cl. 206-346.000.
Maison, Richard L., to Rohr Industries, Inc. On board switching apparatus for trackless air cushion vehicle. 3,841,226, Cl. 104-130.000.
Maiste, Arved; and Robertson, Melvin F., to White Motor Corporation of Canada Limited. Rotary flow control valve for a combine grain bin. 3,841,536, Cl. 222-503.000.
Maistrelli, Roger: *See—*
Dera, Alain; Fayolle, Michel; and Maistrelli, Roger, 3,841,681.
Makowski, Henry S.: *See—*
Lundberg, Robert D.; and Makowski, Henry S., 3,842,154.
Malarbi, Anthony, Jr.: *See—*
Scicchitano, Patsy A.; Malarbi, Anthony, Jr.; Britz, Stanley M.; and McCarthy, James R., 3,841,046.
Maled, Christopher T. Eccentric motion fishing lure. 3,841,012, Cl. 43-26.200.
Malkin, William J., to Permutit Company Inc., The, mesne. Automatically backwashed gravity filter. 3,841,485, Cl. 210-104.000.
Mallery, Lawrence E.; Arken, Theodore; and Swenson, Henning C., Jr., to GTE Sylvania Incorporated. Balloon borne differential temperature sensor and transmission system. 3,841,154, Cl. 73-170.00r.
Mallory, P. R., & Co., Inc.: *See—*
Boyle, Gerard H.; Epstein, James; and Liang, Charles C., 3,841,914.
Larsen, Earl I.; and Krock, Richard H., 3,841,846.
Maloney, Kenneth M.: *See—*
Henderson, David C.; and Maloney, Kenneth M., 3,842,306.
Maloney-Crawford Tank Corporation: *See—*
Gravis, Charles K., III; and Hodgson, Robert A., 3,841,382.
Malpass, Alan: *See—*
Appleby, Brian Lawrence; Malpass, Alan; and Ellis, Kenneth Harold, 3,841,589.
Manning, Robert E., to Sandoz-Wander, Inc. Process for the preparation of substituted or unsubstituted pyridines. 3,842,086, Cl. 260-290.00h.
Manos, George: *See—*
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, 3,842,218.
Mansfield, Ray. Non-snag anchor. 3,841,255, Cl. 114-206.00r.
Manteufel, Dale: *See—*
Schlapmann, William J.; and Manteufel, Dale, 3,841,447.
Mar-Wil Enterprises Ltd.: *See—*
Custick, William L., 3,841,008.
Marceau, William E.: *See—*
Montgomery, William S., Jr.; Marceau, William E.; and Bates, William G., 3,841,855.
Marchetti, Roland A. Method of reclaiming electrolyte for reuse in batteries. 3,841,916, Cl. 136-165.000.
Marcussen, Henry, to Whirlpool Corporation. Removable clothers basket for dryer. 3,840,998, Cl. 34-128.000.
Marg, Charles M.; and Marg, Donald B. Calking cartridge nozzles. 3,841,537, Cl. 222-541.000.
Marg, Donald B.: *See—*
Marg, Charles M.; and Marg, Donald B., 3,841,537.
Marine Construction & Design Co.: *See—*
Tison, Kenneth F., 3,841,011.
Maringer, Albert, to Siemens Aktiengesellschaft. Circuit for the suppression of interference pulses. 3,842,291, Cl. 307-236.000.
Marks, Alvin M. Dipolar electro-optic structures and method. 3,841,732, Cl. 350-160.00r.
Marley, Thomas: *See—*
Smith, Geoffrey; and Marley, Thomas, 3,842,103.
Marquis, Edward Thomas: *See—*
Schulze, Heinz; and Marquis, Edward Thomas, 3,842,081.
Marshall, Don J. Adapter for portable power-operated tire removing tool. 3,841,380, Cl. 157-1.260.
Martel, Jacques; and Buendia, Jean, to Roussel Uclaf. Certain cyclopropane carboxylic acid esters as insecticides. 3,842,177, Cl. 424-274.000.
Marten, John Anthony. Coating for vehicle test bed rollers. 3,841,151, Cl. 73-117.000.
Martin, Charles K., to Kimar Corporation. Protective gas generating heating system for asphalt tanks. 3,841,303, Cl. 126-343.50a.
Martin, Clemence G.: *See—*
Barndt, Charles H., 3,842,377.
Martin Falal, KG: *See—*
Marz, Helmut, 3,841,516.
Martin, Hubert, to Texcell Corporation. Method and apparatus for casting metal. 3,841,387, Cl. 164-81.000.
Martin, Jack, to Westinghouse Electric Corporation. Method of assembling a filament-mount for a single-ended incandescent lamp. 3,840,953, Cl. 29-25.150.
Martin, James C., to Warwick Electronics Inc. Sound demodulator and AFC system. 3,842,198, Cl. 178-5.8af.
Martin, James R., to Block Engineering Inc. Method of manufacturing infrared radiation source. 3,841,920, Cl. 148-6.350.
Martin, Jerry Roy: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,842,069.
Tadinier, John Soloman; and Martin, Jerry Roy, 3,842,068.
Martin, Otis M., to Ditz-Crane. Method of fabricating, shipping and installing a building exterior, panel closure. 3,841,050, Cl. 52-745.000.
Marvin Glass & Associates: *See—*
Barlow, Gordon A., 3,841,629.
Meyer, Burton C., 3,841,636.
Marz, Helmut, to Martin Falal, KG. Container. 3,841,516, Cl. 220-1.500.
Maschinenfabrik Sack GmbH: *See—*
Guse, Rudolf Siegfried, 3,841,125.
Mason, Alfred L.; and Mason, Pauline E.; executrix of said Mason, Alfred L., deceased. Hydraulic slip joint pipe puller. 3,840,968, Cl. 29-237.000.
Mason, Pauline E.: *See—*
Mason, Alfred L.; and Mason, Pauline E., 3,840,968.
Massa Division, Dynamics Corporation of America: *See—*
Massa, Donald P., 3,842,398.
Massa, Donald P., to Massa Division, Dynamics Corporation of America. Apparatus and method for deployment of expendable velocimeter to eliminate doppler shift error in the measurements. 3,842,398, Cl. 340-5.00s.
Massaro, Anthony A., Jr.: *See—*
Harris, William G., Jr.; and Massaro, Anthony A., Jr., 3,841,271.
Masuda, Senichi. Apparatus applying dust particles by contact type electric field curtain. 3,841,264, Cl. 118-622.000.
Mathers, Kenneth R.: *See—*
Albach, Robert W.; Mathers, Kenneth R.; and Carlson, Reuben T., 3,841,321.
Mathis, Thomas C.: *See—*
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,890.
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,955.
Matsubara, Muneo: *See—*
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.
Matsumoto, Fumio: *See—*

Sakakura, Akira; Matsumoto, Fumio; and Ueno, Kiyoshi, 3,841,924.
Matsushita, Kunijiro, to Kumagai Gumi Company Limited. Apparatus for boring a pit. 3,841,421, Cl. 175-212.000.
Matsushita, Tomiharu: *See—*
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, 3,841,129.
Mattel, Inc., mesne: *See—*
Ryan, John W.; Kossoff, Joseph; and Hartman, Jack E., 3,841,020.
Mattes, Bernhard; and Feigl, Erich, to Bosch, Robert, G.m.b.H. Protected semiconductor control circuit. 3,842,317, Cl. 317-33.0sc.
Matthews, Jas., H., & Company: *See—*
Andros, Andrew; and Lukitsch, Joseph, 3,841,726.
Matthews, Joseph S., to Gulf Research & Development Company. Immobilized enzymes. 3,841,970, Cl. 195-63.000.
Mattson, Larry F.: *See—*
Hendrickson, Kenneth E.; Lopour, Warren A.; and Mattson, Larry F., 3,842,331.
Matzner, Markus: *See—*
Chow, Sui-Wu; and Matzner, Markus, 3,842,036.
Maurino, William J.: *See—*
Putzer, Raymond M.; and Maurino, William J., 3,841,822.
Mavrofrides, Dennis A., 10% Raymond Lee Organization, Inc., The. Ball field and game equipment. 3,841,634, Cl. 273-95.00h.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. v.: *See—*
Liebl, Helmuth; and Rasskopf, Klaus, 3,842,269.
Maxey, Joel W., to Ford Motor Company. Expandable shaft key. 3,841,774, Cl. 403-358.000.
Mayer, Hans; Schroder, Heinz; and Schucktanz, Gerhard, to Siemens Aktiengesellschaft. Flow distributor for a steam generator. 3,841,272, Cl. 122-32.000.
Mayer, Oscar, & Co., Inc.: *See—*
Vedvik, Andrew H.; and Layman, Melvin M., 3,841,820.
Mayer, Ronn H., to Unitec, Inc. Ionization detector apparatus. 3,842,409, Cl. 340-228.100.
Mayfield, James L.: *See—*
Bryant, Gerald T.; and Mayfield, James L., 3,841,520.
Mazzoleni, Giorgio: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Nistri, Ugo, 3,842,039.
Mc Carroll, Alan F.: *See—*
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and Mc Carroll, Alan F., 3,841,751.
McAlpine, James Bruce: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,842,069.
McBridge, Joseph J., Jr.: *See—*
Davis, Curry Beach; and McBridge, Joseph J., Jr., 3,842,135.
McCabe, William C. Compressed and thermostated air regulated gas liquid chromatography oven with simultaneously operated multiple chromatography columns. 3,841,059, Cl. 55-197.000.
McCain Mfg. Corporation: *See—*
Cosgrove, James F.; and Soong, William E., 3,841,182.
McCarthy, Charles J.; McCarthy, Jerome P.; and McCarthy, Robert F., to Proctor & Gamble Company, The. Sheet feeding and labeling apparatus. 3,841,623, Cl. 271-126.000.
McCarthy, James R.: *See—*
Scicchitano, Patsy A.; Malarbi, Anthony, Jr.; Britz, Stanley M.; and McCarthy, James R., 3,841,046.
McCarthy, Jerome P.: *See—*
McCarthy, Charles J.; McCarthy, Jerome P.; and McCarthy, Robert F., 3,841,623.
McCarthy, Robert F.: *See—*
McCarthy, Charles J.; McCarthy, Jerome P.; and McCarthy, Robert F., 3,841,623.
McConnel, F. W., Limited: *See—*
Hudson, John Colin, 3,841,072.
McDonald, Edward A., to Goodyear Tire & Rubber Company, The. Method of making a sand mold for casting tread rings utilized in tire molds. 3,840,971, Cl. 29-407.000.
McDonald, George K.; Douglas, Robert M.; and Leibson, Irving, to Dart Industries, Inc. Ethylene polymerization process. 3,842,060, Cl. 260-94.90r.
McDonnell, Roy Edward. Flow regulating device. 3,841,354, Cl. 138-43.000.
McEwan, James. Apparatus for sharpening different types of circular saws, tools and other cutters having a wide range of diameters. 3,841,174, Cl. 76-41.000.
McFarland, William W. Cover for load-holding apparatus. 3,841,697, Cl. 296-100.000.
McGee, Albert L. Dual aeration and filtration system with recycling. 3,841,997, Cl. 210-15.000.
McGill, Walter N. Spring type ball projecting device. 3,841,294, Cl. 124-16.000.
McIntyre, James Eric: *See—*
Browne, Anthony Arthur Briarly; and McIntyre, James Eric, 3,842,040.
Browne, Anthony Arthur Briarly; and McIntyre, James Eric, 3,842,041.
McKinley, Wayne A.; and Sarantakis, Dimitrios, to American Home Products Corporation. (Ala 3, Ala 14)-SRIF and intermediates. 3,842,066, Cl. 260-112.500.
McLean, Neil J. Seal for bearings and similar rotating members. 3,841,643, Cl. 277-57.000.
McMillan, William D.: *See—*
Ferre, Glenn E.; Franz, Maurice F.; Lohbauer, Kenneth R.; and McMillan, William D., 3,841,795.
McMullen, Wayne W. Snow and water vehicle. 3,841,649, Cl. 280-16.000.
McNeill, Charles F. Safety belt for motorcycles. 3,840,902, Cl. 2-311.000.
Mead, Dennis E., to Lipe Rollway Corporation. Feeder and orienter. 3,841,471, Cl. 198-289.000.
Mech, Harold W., to Motorola, Inc. Machine for cutting brittle materials. 3,841,297, Cl. 125-12.000.
Meckler, Gershon, to IS Incorporated Systems Company. Multiple zone building structure. 3,841,206, Cl. 98-40.0dl.
Med-Pak Corporation: *See—*
Huggins, James A., 3,840,906.
Medical Evaluation Devices & Instruments Corp.: *See—*
Tate, Thomas E., 3,841,308.
Medical Plastics, Inc.: *See—*
Bolduc, Lee R., 3,842,394.
Meguro, Kazuo, to Nihon Tsusho Kabushiki Kaisha. Cleaner for conveyor belt. 3,841,470, Cl. 198-230.000.
Mehdizadeh, Parviz, to Continental Oil Company. Method of improving the collapse strength of conduits. 3,841,137, Cl. 72-367.000.
Mehlhart, Erwin: *See—*
Buschmann, Hans; Mehlhart, Erwin; Schwibbe, Valfred; and Pomplun, Emil, 3,841,459.
Meiklejohn, I. G., & Co., Limited: *See—*
Meiklejohn, Ian Goodhall, 3,840,965.
Meiklejohn, Ian Goodhall, to Meiklejohn, I. G., & Co., Limited. Apparatus for manufacture of spoke wheels. 3,840,965, Cl. 29-208.00d.
Meindl, Hubert: *See—*
Hindermann, Peter; and Meindl, Hubert, 3,842,102.
Meiser, Werner: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,842,078.
Mekontrol, Inc.: *See—*
Shaw, Raymond J., 3,842,258.
Melamed, Nathan T.; and Phillips, David C., to Westinghouse Electric Corporation. Diazo chemical transfer laser. 3,842,369, Cl. 331-94.500.
Mengeringhausen, Max, to Mero AG. Process for the production of connectors for space frameworks or the like. 3,841,780, Cl. 408-1.000.
Mengeringhausen, Max, to Mero AG. Apparatus for the production of connectors for space frameworks or the like. 3,841,781, Cl. 408-35.000.
Mengeringhausen, Max, to Mero AG. Apparatus for the production of connectors for space frameworks or the like. 3,841,782, Cl. 408-50.000.
Mengeringhausen, Max, to Mero AG. Apparatus for the production of connectors for space frameworks or the like. 3,841,783, Cl. 408-50.000.
Mengeringhausen Max, to Mero AG. Apparatus for the production of connectors for space frameworks or the like. 3,841,784, Cl. 408-50.000.
Menzl, Roland L.: *See—*
Bertolacini, Ralph J.; Hopkins, Paul Donald; and Menzl, Roland L., 3,841,995.
Mercer, Robert L., to General Motors Corporation. Dishwasher latch. 3,841,675, Cl. 292-241.000.
Merck Sharp & Dohme (I.A.) Corp.: *See—*
Williams, Haydn Windsor Richard; and Rooney, Clarence Stanley, 3,842,087.
Merila, John B. Soda straw dispenser. 3,841,531, Cl. 222-189.000.
Merkle, Ralph H., to General Motors Corporation. Vehicle cab mounting means. 3,841,694, Cl. 296-35.00r.
Mero AG: *See—*
Mengeringhausen, Max, 3,841,780.
Mengeringhausen, Max, 3,841,781.
Mengeringhausen, Max, 3,841,782.
Mengeringhausen, Max, 3,841,783.
Mengeringhausen Max, 3,841,784.
Merritt, Paul H.: *See—*
Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., 3,841,201.
Merry, Deane W.: *See—*
Harendza-Harinxma, Alfred Joseph, 3,842,070.
Mertens, Willi, to Siemens Aktiengesellschaft. Insulating tape for the manufacture of an insulating jacket for electric conductors impregnated with a termosetting epoxy resin acidanhydride curing mixture. 3,841,959, Cl. 161-163.000.
Messerschmitt Bolkow-Blohm GmbH: *See—*
Liefeld, Gustav; and Kurvin, Charles, 3,842,400.
Messing, Ralph A., to Corning Glass Works. Synergistic enzymes adsorbed within porous inorganic carriers. 3,841,971, Cl. 195-63.000.
Metallurgical Exoproducts Corporation: *See—*
Rocher, George, 3,841,616.
Metallurgical Processes Limited: *See—*
Benatt, Frank George Simon; and Gammon, Michael William, 3,841,862.
Metalphoto Corporation: a subsidiary of Horizons Research Incorporated: *See—*
Pallant, Jon W., 3,841,891.

Metco, Inc.: *See—*
Novinski, Edward Robert; and Harrington, John H., 3,841,901.
Metro, John G., to General Electric Company. Monolithic stereo decoder. 3,842,211, Cl. 179-15.0bt.
Metz, Hendrik Theodoor: *See—*
Koppen, Dirk Jan; and Metz, Hendrik Theodoor, 3,841,096.
Metz, Werner, to Burg-Mobel Dieter Ruddies. System for joining furniture panels. 3,841,052, Cl. 52-753.00k.
Metzger, Carl: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,842,078.
Meyer, Burton C., to Marvin Glass & Associates. Vibratory game. 3,841,636, Cl. 273-110.000.
Meyer, Charles M., to Colorado Ski Area Equipment Company. Ski tie. 3,841,648, Cl. 280-11.37a.
Meyer, Martin H.: *See—*
Scarnato, Thomas J.; Cicci, George B.; and Meyer, Martin H., 3,841,070.
Meyer, Meinert: *See—*
Gutlbauer, Franz; Meyer, Meinert; and Schlanzke, Claus-Georg, 3,841,180.
Meyer, Richard W., to Owens-Illinois, Inc. Apparatus for measuring the psychogalvanic reflex. 3,841,316, Cl. 128-1.10z.
Meyer, Robert: *See—*
Balamuth, Lewis; Rutten, Michael R.; and Meyer, Robert, 3,840,932.
Meyer-Simon, Eugen; Schwarze, Werner; Thurn, Friedrich; and Michel, Rudolf, to Deutsche Gold und Silber-Scheideanstalt vormals Roessler. Sulfur containing organosilicon compounds. 3,842,111, Cl. 260-448.20e.
Meyers, Willis G., to General Motors Corporation. Engine cylinder head gasket. 3,841,289, Cl. 123-193.0ch.
Michael, Tantrimudalige Anthony Don; and Lambert, Edward Henry. Method for sealing the oesophagus and providing artificial respiration. 3,841,319, Cl. 128-28.000.
Michaelson, Joseph B. Nitroso aryloxy quaternary ammonium compounds. 3,842,079, Cl. 260-247.70c.
Michel, Helmut: *See—*
Griensteidl, Gerhard; and Michel, Helmut, 3,841,350.
Michel, Rudolf: *See—*
Meyer-Simon, Eugen; Schwarze, Werner; Thurn, Friedrich; and Michel, Rudolf, 3,842,111.
Michelson, Louis, to Lion Precision Corporation. Gage for measuring the tension in extension springs. 3,841,153, Cl. 73-161.000.
Mick, Stanley H., to General Motors Corporation. Carburetor. 3,841,281, Cl. 123-97.00b.
Mickowski, John: *See—*
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, 3,842,218.
Microbyx Corporation: *See—*
Bucalo, Louis, 3,842,166.
Microdot Inc.: *See—*
Thurston, Raymond L., 3,841,371.
Middleton, Kenneth, 20% to Lee, Raymond, Organization, Inc., The. Combined sleeping bag and inflatable tent. 3,840,919, Cl. 5-343.000.
Midland Silicones Limited: *See—*
Owen, William J.; and Cooper, Bryan Ewart, 3,842,153.
Midland-Ross Corporation: *See—*
Schultz, Forrest O. E., 3,841,714.
Midwinter, John E., to Post Office, The. Improvements in or relating to liquid core dielectric waveguides. 3,841,731, Cl. 350-96.0wg.
Miehaus, William R., to Scripps, E. W. Company, The. Electromechanical detector system and method for controlling flow of newspaper bundles. 3,841,205, Cl. 93-93.00m.
Mierendorf, Robert E., to Harnischfeger Corporation. Control for electromechanical brake having transistorized timing reset means. 3,842,329, Cl. 318-372.000.
Miki, Tokutaro: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.
Milde, Karl F., Jr. Heating and cooling method. 3,841,391, Cl. 165-2.000.
Mildern, William D. Valve. 3,841,602, Cl. 251-353.000.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Maleic acid half ester terminated polystyrene macromolecular monomers having a substantially uniform molecular weight distribution. 3,842,050, Cl. 260-78.40d.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Vinyl ester terminated macromolecular monomers having a substantially uniform molecular weight distribution and process for preparing same. 3,842,057, Cl. 260-93.50a.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Ether terminated polystyrene macromolecular monomers having a substantially uniform molecular weight distribution. 3,842,058, Cl. 260-93.50a.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Acrylate and methacrylate terminated polystyrene macromolecular monomers having a substantially uniform molecular weight distribution. 3,842,059, Cl. 260-93.50a.
Milkovich, Ralph; and Chiang, Mutong I., to CPC International Inc. Polymerizable diblock macromolecular monomers having a substantially uniform molecular weight distribution and their preparation. 3,842,146, Cl. 260-879.000.
Miller, Clarence S., Jr.; and Seely, George A., to AWT Systems, Inc. Solids feed to a pressurized reactor. 3,841,465, Cl. 198-213.000.
Miller, Harlan E., to International Telephone and Telegraph Corporation. Telephone subscriber recorded announcement system. 3,842,212, Cl. 179-91.00r.
Miller, Harold L.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Drop-out fuse structure with leaf spring in hinge assembly for porviding a kickout force. 3,842,384, Cl. 337-171.000.
Miller, Jack Vernon, to M&L Aquatics. Aquarium assembly. 3,841,267, Cl. 119-5.000.
Miller, James E., to CPC International Inc. Process for dyeing polyester fiber. 3,841,831, Cl. 8-21.00c.
Miller, Joe Jed: *See—*
Lo, Ching-Tsan; Miller, Joe Jed; and Cywinski, Norbert Francis, 3,842,132.
Miller, Paul C.: *See—*
Chase, Arthur B.; and Miller, Paul C., 3,841,746.
Miller Printing Machinery Co.: *See—*
Carricato, Guy V., 3,841,625.
Weisgerber, Willi, 3,841,626.
Miller, Robert C., to Safeway Products, Inc. Method of making water bed heater. 3,840,985, Cl. 29-611.000.
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., to Production Technology Inc., mesne. Method for angular alignment of inertia or friction welded parts. 3,840,979, Cl. 29-470.300.
Miller, Robert N.: *See—*
Boggs, Wilburn A.; and Miller, Robert N., 3,841,896.
Mills, Stacey M.: *See—*
Wilkins, Judd R.; and Mills, Stacey M., 3,841,973.
Miltenberger, Robert S., to National Steel Corporation. Addition agent for deoxidizing and recarburizing degassed steel and method employing the same. 3,841,861, Cl. 75-53.000.
Minami, Nobuyoshi: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.
Minami, Toshihiro; and Shiina, Akito, to Kobe Steel, Inc. Method of lubricating a work, especially a wire in a warm forging process. 3,841,126, Cl. 72-45.000.
Mine Safety Appliances Company: *See—*
Fishkin, Edward A.; and Wilson, Harry W., 3,842,162.
Miner, Carroll R., to General Instrument Corporation. Turner drive assembly with neutralized bias for enhanced stability. 3,841,164, Cl. 74-10.540.
Minigrip, Inc.: *See—*
Herz, Andre, 3,841,816.
Minkema, William H.; and Whyzmuzis, Paul D., to General Mills Chemicals, Inc. Recoverable warp sizing. 3,841,833, Cl. 8-138.000.
Minnesota Mining and Manufacturing Company: *See—*
Kropp, James E., 3,842,019.
Minolta Camera Kabushiki Kaisha: *See—*
Ogawa, Masaya, 3,841,753.
Mironov, Ivan Antonovich; Nikitin, Vladislav Iosifovich; and Kiselev, Valentin Dmitrievich. Excavating and grading machine with adjustable rotary cutting head. 3,841,006, Cl. 37-108.00r.
Miskelly, Robert A. Luggage carrier. 3,841,650, Cl. 280-37.000.
Mitchell, Richard E., to Sun Research and Development Co. System for reacting alkylaromatics with alkadienes. 3,841,844, Cl. 23-288.00e.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Ando, Shigeru; and Miyazawa, Takayuki, 3,841,729.
Kato, Satoru; and Tayama, Isamu, 3,841,067.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Sato, Katsuo; and Imae, Yoshio, 3,842,032.
Mitsubishi Jikogyo Kabushiki Kaisha: *See—*
Ujiie, Akira, 3,842,237.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Ujiie, Akira, 3,841,383.
Mitsubishi Petrochemical Company Limited: *See—*
Taksahi, Masanori; and Yoshiyasu, Mitsuo, 3,841,943.
Mitsubishi Rayon Company Limited: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Kawashima, Masao, 3,842,043.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Nagahama, Tatsuya, 3,842,004.
Mitsui Petrochemical Industries, Ltd.: *See—*
Tomatu, Toshiharu; and Iwata, Tadao, 3,842,147.
Miwa, Ichiro: *See—*
Takemoto, Iwao; Miwa, Ichiro; and Tokuyama, Takashi, 3,841,928.
Miyasaka, Katsuhiko: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.
Miyatuka, Hajime: *See—*
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,841,893.
Miyauchi, Hiroshi: *See—*
Kishimoto, Kenichi; Miyauchi, Hiroshi; Inagaki, Yasuhiko; and Fujimoto, Joji, 3,841,835.
Miyazawa, Takayuki: *See—*
Ando, Shigeru; and Miyazawa, Takayuki, 3,841,729.
Mizutani, Shigeo: *See—*
Shibukawa, Takashi; Hoten, Masanobu; Hayasaki, Naoki; and Mizutani, Shigeo, 3,841,830.
MI², Incorporated: *See—*

Fretwell, Richard D., 3,842,207.
Mo Och Domsjo Aktiebolag: *See—*
Brannland, Rolf Carl August; Hultman, Bengt Goran; and Hubert, Bertil Valdemar, 3,842,160.
Mobil Oil Corporation: *See—*
Baldwin, Willett F., 3,841,144.
Carman, Warner T., 3,842,008.
Chen, Nai Yuen; Leavitt, Richard I.; and Coty, Vernon F., 3,841,972.
Moehlenpah, Walter G. Connector plate. 3,841,194, Cl. 85-13.000.
Mohrlok, Werner. Advertising display device. 3,841,009, Cl. 40-126.00a.
Moldenhauer, August J.; Moldenhauer, Melvin A.; and Moldenhauer, Richard J. Pelletizing apparatus. 3,841,817, Cl. 425-331.000.
Moldenhauer, Melvin A.: *See—*
Moldenhauer, August J.; Moldenhauer, Melvin A.; and Moldenhauer, Richard J., 3,841,817.
Moldenhauer, Richard J.: *See—*
Moldenhauer, August J.; Moldenhauer, Melvin A.; and Moldenhauer, Richard J., 3,841,817.
Moment monitoring system for hydraulic-piston type cranes: *See—*
Jackson, William E.; and Becker, James M., 3,841,493.
Monon Trailer, Inc.: *See—*
Ehrlich, Donald J., 3,841,661.
Monsanto Company: *See—*
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,890.
Coaker, Anthony W. M.; Darby, Joseph R.; and Mathis, Thomas C., 3,841,955.
Dobinson, Frank; and Pelezo, Chris A., 3,842,028.
Libers, Roland; and Smalling, Claude W., Jr., 3,842,137.
Walsh, Robert J., 3,841,031.
Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Radial tire having bead stiffener of crossed steel cords. 3,841,377, Cl. 152-362.0cs.
Montgomery, ary B.; and Gach, Peter P., to Sunbeam Plastic Corporation. Safety closurer. 3,841,514, Cl. 215-9.000.
Montgomery, Harry T.: *See—*
Fisher, Howard M.; and Montgomery, Harry T., 3,841,617.
Montgomery, William S., Jr.; Marceau, William E.; and Bates, William G., to Selas Corporation. Glas tempering control system. 3,841,855, Cl. 65-29.000.
Moore Business Forms, Inc.: *See—*
Wakeman, William R., 3,841,549.
Moore, Fred W.: *See—*
Barry, Henry F.; Hallada, Calvin J.; and Moore, Fred W., 3,842,009.
Moote, Truman P.; and Vandaveer, Roscoe F., to Amoco Production Company. Subsurface formation treatment. 3,841,405, Cl. 166-294.000.
Moradazeh, Yaqub: *See—*
Krause, K. A.; and Moradazeh, Yaqub, 3,841,892.
Morgan Berkeley & Company Limited: *See—*
Davies, Paul Trevor; and Morgan, John Harold, 3,841,250.
Morgan, John Harold: *See—*
Davies, Paul Trevor; and Morgan, John Harold, 3,841,250.
Morgan, Robert E.; and Palma, James D., to General Motors Corporation. Rotary engine oil metering pump. 3,841,803, Cl. 418-84.000.
Morinaga Milk Industry Co., Ltd.: *See—*
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,841,352.
Morris, Max: *See—*
Olson, Donald M., 3,841,318.
Morris, Michael: *See—*
Allen, William Douglas; and Morris, Michael, 3,842,293.
Morrisey, Edward J., to United States of America, Air Force. Foam structured rocket dispenser. 3,841,197, Cl. 89-1.816.
Morrison, Richard L.; and Webb, Venard C., to Thermo-Flex, Inc. Landing cushion for falling objects. 3,840,922, Cl. 5-350.000.
Morrison, Richard L.; and Webb, Benard C., to Thermo-Flex, Inc. Landing cushion for falling objects. 3,841,922, Cl. 5-350.000.
Mortimoto, Takuo: *See—*
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.
Morton-Norwich Products, Inc.: *See—*
Steger, John F., 3,841,925.
Moser, Kenneth B.; and Verbanac, Frank, to Staley, A. E., Manufacturing Company. Process of flocculating aqueous suspensions with cationic starch ethers. 3,842,005, Cl. 210-47.000.
Motorola, Inc.: *See—*
Mech, Harold W., 3,841,297.
Motus Chemical, Inc.: *See—*
Burr, Harley W., 3,841,886.
Mowery, Harold P.: *See—*
Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., 3,842,192.
Mowrey, Rowland George; and Wilkes, Glenn Richard, to Eastman Kodak Company. Cobalt (III) complex amplifier baths in color photographic processes. 3,841,873, Cl. 96-22.000.
Muller, Alfred: *See—*
Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, 3,840,928.
Muller, George H., to Ford Motor Company. Resilient bumper assembly. 3,841,679, Cl. 293-63.000.
Muller, George H., to Ford Motor Company. Resilient bumper assembly. 3,841,680, Cl. 293-63.000.
Muller, Henricus; Pirk, Hans; and Hackstein, Karl, to Nukem, GmbH. Treatment of waste materials generated in the conversion of UF_6 to UO_2 by the AUC route. 3,842,155, Cl. 423-15.000.
Muller, Hermann: *See—*
Beck, Gerhard; Beck, Richard; Muller, Alfred; Muller, Hermann; and Gluck, Eberhard, 3,840,928.
Muller, Rolf; and Staudt, Heinrich, to Bosch, Robert, G.m.b.H. Composite centrifugal speed-dependent fuel controller for fuel injection pumps and electric signal transducer. 3,841,285, Cl. 123-139.00e.
Mune, Charles, to Heinemann Electric Company. Fastener and circuit braker case. 3,842,376, Cl. 335-202.000.
Munshower, Kenneth: *See—*
Fuller, Ross; Munshower, Kenneth; and Lightkep, William E., 3,841,472.
Murphy, Adron, 20% to Raymond Lee Organization, Inc., The. Hand tool for installing brake shoes. 3,841,176, Cl. 81-3.00r.
Murphy, John V., to Avco Corporation. Safing and arming apparatus for a munition. 3,841,220, Cl. 102-70.20r.
Muto, Kiyoshi; and Hisada, Toshihiko, to Kajima Corporation. Supporting structure for pressure vessel for nuclear reactors. 3,841,593, Cl. 248-146.000.
Myers, John D., to Owens-Illinois, Inc. Hybrid laser structures. 3,842,368, Cl. 331-94.500.
Nabara, Akira: *See—*
Takahashi, Tsunehiko; and Nabara, Akira, 3,842,195.
Nadherny, Rudolph E.: *See—*
Smith, Edward Payson; and Nadherny, Rudolph E., 3,841,229.
Nagahama, Tatsuya, to Mitsui Mining & Smelting Co., Ltd. Flotation machine. 3,842,004, Cl. 210-44.000.
Nagaoka, Shinji: *See—*
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,842,429.
Naito, Okito, to Kabushiki Kaisha Suwa Seikosha. Driving circuit for a display device. 3,842,411, Cl. 340-332.000.
Naito, Shuichi: *See—*
Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshihiko; Kawase, Kohei; and Tamaru, Kenzi, 3,842,113.
Ichikawa, Masaru; Naito, Shuichi; Kawase, Kohei; and Tamaru, Kenzi, 3,842,121.
Najarian, Nishan J. Reading-training devices. 3,841,002, Cl. 35-35.00b.
Nakagawa, Tadashi: *See—*
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,842,429.
Nakamoto, Soichi: *See—*
Tsunekawa, Tokuichi; Nakamoto, Soichi; and Hasegawa, Goro, 3,842,424.
Nakamura, Kazumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hybrid electric car. 3,842,287, Cl. 290-16.000.
Nakamura, Takezo; and Iwasaki, Yukio, to Shinmeiwa Kogyo Kabushiki Kaisha. Method and apparatus for thermally decomposing refuse. 3,841,239, Cl. 110-8.00c.
Nakano, Kazuaki: *See—*
Torigoe, Masataka; Nakano, Kazuaki; and Aruga, Shiro, 3,842,056.
Nakao, Kozo: *See—*
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Nalco Chemical Company: *See—*
Ryan, Roger C., 3,841,399.
Nankanishi, Jozo: *See—*
Nonaka, Yoshihiro; and Nankanishi, Jozo, 3,841,909.
Natelson, Samuel, to Rohe Scientific Corp. Centrifuge cups for automatic chemical analyzer. 3,841,838, Cl. 23-259.000.
National Research Development Corporation: *See—*
Deane, Graham, 3,840,905.
Jakeman, Eric; Jones, Robin; and Oliver, Christopher John, 3,842,252.
Stewart, David John, 3,842,353.
National Starch and Chemical Corporation: *See—*
Tessler, Martin M., 3,842,071.
Thompson, James M.; Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,841,902.
National Steel Corporation: *See—*
Atkinson, Edward S., 3,841,557.
Miltenberger, Robert S., 3,841,861.
National Telephone Supply Company, The: *See—*
Neale, Dory J., Sr., 3,842,191.
Natzke, Richard E., to Inland Steel Company. Non-stripping type bar delivery system. 3,841,135, Cl. 72-227.000.
Nautron Corporation: *See—*
Tufts, Wesley M.; and Albertassi, James H., 3,840,914.
Neale, Dory J., Sr., to National Telephone Supply Company, The. Insulated wire splice. 3,842,191, Cl. 174-88.00r.
Nederlands Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid: *See—*
Kruiswijk, Franciscus Josephus, 3,841,324.
Nederlandse Organisatie Voor Toegepast-Natuurweten Schappelijk Onderzoek Ten Behoeve Van de Rijksverdediging: *See—*

Dijkstra, Fokke Cornelius; Groothuizen, Theodorus Maria; Pasman, Hermanus Johannes; and Van De Putte, Tonny, 3,842,181.
Nemis, James: *See*—
Parisotto, Antonio; and Nemis, James, 3,841,717.
Nemschoff, Mark S., to FMC Corporation. Engine isolation system. 3,841,426, Cl. 180-64.00r.
Neotec Corporation: *See*—
Selgin, Paul J., 3,841,761.
Nephew, Oliver T.: *See*—
Chalupsky, Paul A.; and Nephew, Oliver T., 3,841,494.
Netta, Louis A., to Thomas & Betts Corporation. Protective device for a power tool. 3,840,987, Cl. 30-90.100.
Nettli, Per, to A/S Apothekernes Laboratorium for Specialpraeparator. Process for removing proteins and decomposition products thereof from waste water. 3,842,003, Cl. 210-43.000.
Neubert, Rolf: *See*—
Kutscher, Gerhard; Droge, Josef; Wehling, Rolf; and Neubert, Rolf, 3,841,075.
Wachendorf, Friedrich; Winkler, Alois; Twillman, Dieter; and Neubert, Rolf, 3,841,074.
Neumann, Ulrich, to Chemiebau Dr. A. Zieren GmbH u. Co. KG. Process for the preparation of sodium carbonate monohydrate from a sodium hydroxide solution produced according to the diaphragm process. 3,842,157, Cl. 423-188.000.
Neveu, Jean-Louis, to Centre Technique Industriel dit: Institut Textile de France. Method and apparatus for making a lap of fibres. 3,840,941, Cl. 19-65.00t.
New England Log Homes, Inc.: *See*—
Vizziello, Vito M.; and Bouteiller, Charles A., 3,841,367.
New York Wire Mills Corp.: *See*—
Tolliver, Wilbur E., 3,841,591.
Newsock, Roger L.; and Antrim, Warren W., to General Motors Corporation. Friction plast assembly. 3,841,452, Cl. 192-107.00r.
Niagara Therapy Manufacturing Corporation: *See*—
Albach, Robert W.; Mathers, Kenneth R.; and Carlson, Reuben T., 3,841,321.
Nicholson, Bruce Heywood. Models representing molecular structure. 3,841,001, Cl. 35-18.00a.
Nicoletti, Tullio J. Dumping car. 3,841,234, Cl. 105-263.000.
Niebylski, Leonard M.; and Immethun, Peter A., to Ethyl Corporation. Metal catalysts and method. 3,842,159, Cl. 423-213.500.
Nielsen, Tage, to Rite Autotronics Corporation. Ignition system. 3,841,287, Cl. 123-148.00e.
Nihon Tsusho Kabushiki Kaisha: *See*—
Meguro, Kazuo, 3,841,470.
Niimura, Isao: *See*—
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,842,030.
Nikitin, Vladislav Iosifovich: *See*—
Mironov, Ivan Antonovich; Nikitin, Vladislav Iosifovich; and Kiselev, Valentin Dmitrievich, 3,841,006.
Nikitin, Vladislav Iosifovich; and Eltsov, Nikolai Pavlovich. Earth-moving and planing machine operable on the sides of hills and mountains. 3,841,410, Cl. 172-49.000.
Nilsson, Jan, to Allamanna Svenska Electriska Aktiebolaget. Press for hydrostatic extrusion of tubes. 3,841,128, Cl. 72-60.000.
Nilsson, Per; and Bergstedt, Bertil, to AB Welin. Ship's accommodation ladder. 3,841,439, Cl. 182-86.000.
Nilsson, Per; and Bergstedt, Bertil, to AB Welin. Ship's accomodation ladder. 3,841,539, Cl. 182-86.000.
Ninagawa, Yoichi: *See*—
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Nippon Chemical Industrial Co., Ltd.: *See*—
Fukuda, Yasuhiko; and Osada, Isao, 3,842,011.
Nippon Electric Company, Limited: *See*—
Doi, Kikuo; and Futami, Takehiro, 3,842,294.
Iwakawa, Tsunektyo; and Yano, Akira, 3,842,314.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Aoki, Eiichiro, 3,842,183.
Okamoto, Eisaku, 3,842,205.
Nippon Sheet Glass Co., Ltd.: *See*—
Akashi, Naotomo, 3,841,858.
Nippon Steel Corporation: *See*—
Sakakura, Akira; Matsumoto, Fumio; and Ueno, Kiyoshi, 3,841,924.
Nippondenso Co., Ltd.: *See*—
Ota, Nobuyoshi, 3,841,551.
Nishida, Takashi: *See*—
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, to Kobe Steel, Limited. Continuous, hydrostatic extrusion process and an apparatus using the same. 3,841,129, Cl. 72-60.000.
Nishino, Akio, to Xidex Corporation. Method for improving the photographic characteristics of vesicular photographic materials. 3,841,874, Cl. 96-27.00r.
Nistri, Ugo: *See*—
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Nistri, Ugo, 3,842,039.
Nitta Gelatin Kabushiki Kaisha: *See*—
Nonaka, Yoshihiro; and Nankanishi, Jozo, 3,841,909.
Nitta, Tohei, to Westinghouse Electric Corporation. Shielded metal enclosed electrical equipment. 3,842,318, Cl. 317-62.000.
Nix, Ronald George: *See*—
Toulson, Ronald Garnett; and Nix, Ronald George, 3,841,040.
Nixdorf Computer AG: *See*—
Buschmann, Hans; Mehlhart, Erwin; Schwibbe, Valfred; and Pomplun, Emil, 3,841,459.
Noakes, John E. Liquid scintillation unit with low background noise. 3,842,278, Cl. 250-369.000.
Noguti, Masataka: *See*—
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, 3,841,129.
Nonaka, Yoshihiro; and Nankanishi, Jozo, to Nitta Gelatin Kabushiki Kaisha. Method and apparatus for removing grease from animal bones. 3,841,909, Cl. 134-5.000.
Norder, Paul D.: *See*—
Drexler, Edward E.; and Norder, Paul D., 3,841,754.
Nordson Corporation: *See*—
Drozek, Julius S.; Horvath, Richard A.; and Vilagi, Burton J., 3,841,567.
Norman, Ralph L.: *See*—
Hagood, Jerry W.; Shelton, Joe; and Norman, Ralph L., 3,840,955.
North American Philips Corporation: *See*—
Wexler, Joseph S., 3,842,327.
North, Mark, to Lysaght, John (Australia) Limited. Method and apparatus for making expanded metal sheets. 3,840,952, Cl. 29-6.200.
Northrop Corporation: *See*—
Powers, Joseph William, Jr.; and Towner, George H., 3,842,251.
Northwest Sanitation Products, Inc.: *See*—
Easte, Avard Joseph, 3,841,524.
Norton, Roy C., Jr., to Budd Company, The. Reinforced brake drum. 3,841,448, Cl. 188-218.00r.
Novais, Julio Maggioly: *See*—
Emery, Anthony Nicholas; Barker, Sidney Alan; and Novais, Julio Maggioly, 3,841,969.
Novakovich, Milan. High efficiency pollutant-free combustion gas generator. 3,841,098, Cl. 60-647.000.
Novinski, Edward Robert; and Harrington, John H., to Metco, Inc. Aluminum-and molybdenum-coated nickel, copper or iron core flame spray materials. 3,841,901, Cl. 117-105.200.
Now, Sergio: *See*—
Gordini, Silvano; and Now, Sergio, 3,842,052.
Nukem, GmbH: *See*—
Muller, Henricus; Pirk, Hans; and Hackstein, Karl, 3,842,155.
N.V. Industrieele Handelscombinatie Holland: *See*—
van Heijst, Willem Jan, 3,841,357.
Van Heijst, Willem Jan, 3,841,501.
Oaks, Seibert S.: *See*—
Kniff, Thomas J.; Leibee, Donald L.; and Oaks, Seibert S., 3,841,708.
O'Brien, John A.: *See*—
MacGovern, Alan J.; and O'Brien, John A., 3,842,261.
O'Connor, Ian A.; and O'Connor, James A. Container having safety closure. 3,841,513, Cl. 215-9.000.
O'Connor, James A.: *See*—
O'Connor, Ian A.; and O'Connor, James A., 3,841,513.
Odawara, Chuichiro. Hull construction. 3,841,258, Cl. 115-39.000.
O'Dell Manufacturing, Inc.: *See*—
Rehfeld, Fred L. J., 3,841,798.
O'Donald, Burton T. Watch display switch. 3,841,080, Cl. 58-23.0ba.
O'Driscoll, Kenneth F.; and Isen, Allan A., said Isen assor. to Warner-Lambert Company, mesne. Irradiated composition for soft contact lens. 3,841,985, Cl. 204-159.160.
Oehler-Wyhlen-Lagertechnik AG: *See*—
Suter, Walter, 3,841,460.
Off, Joseph W. A.; Wilbanks, Darrel J.; and Willcox, Waid O., to Haggar Company. Semiautomatic belt loop sewing system. 3,841,247, Cl. 112-121.270.
Ogata, Fumimaro: *See*—
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,842,049.
Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Scanning system. 3,841,753, Cl. 355-8.000.
Ohaver, David S.: *See*—
Schmitt, James L.; and Ohaver, David S., 3,841,608.
Ohlinger, Manfred: *See*—
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, 3,841,907.
Ohmura, Yoshiaki: *See*—
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Ohrberg, Carl Verner: *See*—
Sturlason, Leif Viggo; and Ohrberg, Carl Verner, 3,841,801.
Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, to Danfoss A/S. Gerotor device with hydraulic valve compensating means. 3,841,800, Cl. 418-61.00b.
Ohtomo, Koichiro: *See*—
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,842,049.
Oikawa, Takashi: *See*—
Hasegawa, Takashi; and Oikawa, Takashi, 3,841,919.

Oka, Michio: *See*—
Sasaki, Toshiro; Oka, Michio; and Washio, Yoshiaki, 3,841,990.
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, to Morinaga Milk Industry Co., Ltd. Compound aseptic valve. 3,841,352, Cl. 137-614.190.
Okada, Ryuzo: *See*—
Terajima, Yasuhiko; Okada, Ryuzo; and Horie, Kiyoshi, 3,841,752.
Okada, Tomio: *See*—
Hamamoto, Yoshito; and Okada, Tomio, 3,842,115.
Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Tremolo effect producing acoustic filter system. 3,842,205, Cl. 179-1.00j.
Okazaki, Hideo: *See*—
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,842,030.
Okazaki, Kaoru; Higuchi, Aira; and Imaeda, Noaki, to Toray Industries, Inc. Artificial leather. 3,841,897, Cl. 117-76.00t.
Oklahoma Publishing Company, The: *See*—
Osborne, Philip S., 3,841,974.
Okudaira, Sadao: *See*—
Takahashi, Yasuo; and Okudaira, Sadao, 3,841,736.
Okuno, Ryuzo, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for preheating steel ingot or blooms by the use of high-speed jet streams as well as heating furnace using the same. 3,841,614, Cl. 266-5.000.
O'Leary, Walter E.: *See*—
Hammonds, James C.; and O'Leary, Walter E., 3,841,236.
Olin Corporation: *See*—
Shapiro, Eugene; and Crane, Jacob, 3,841,921.
Oliver, Christopher John: *See*—
Jakeman, Eric; Jones, Robin; and Oliver, Christopher John, 3,842,252.
Olsen, Jan-Erik: *See*—
Stark, Sven Olof Soren; and Olsen, Jan-Erik, 3,841,477.
Olson, Altin J.: *See*—
Schwab, Albert J.; and Olson, Altin J., 3,840,933.
Olson, Donald M., 33 1/3% each to Morris, Max and Kirkman, Earl L. Vaginal speculum. 3,841,318, Cl. 128-20.000.
Olson, John W., to C&D Valve Manufacturing Company, a joint Venture. Method and apparatus for maintaining and servicing a pressurized refrigeration system or the like. 3,840,967, Cl. 29-213.000.
Olsson, Billy Erik, to AMP Incorporated. Cluster block housing and pin receptacle. 3,842,396, Cl. 339-217.00s.
Olsson, Karl-Erik: *See*—
Ekstrom, Ake; Juhlin, Lars-Erik; and Olsson, Karl-Erik, 3,842,337.
Olt, Arthur E., Jr.: *See*—
Babbitt, John H., Jr.; Boyer, Ronald G.; and Olt, Arthur E., Jr., 3,841,430.
Olympus Optical Company, Limited: *See*—
Hashimoto, Nobuyoshi, 3,840,963.
Omietanski, George M.; and Chuang, Vincent T., to Union Carbide Corporation. Hydroxyalkenylsiloxane rigid urethane foam stabilizers. 3,842,112, Cl. 260-448.20b.
Onda, Eiichi: *See*—
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,842,429.
O'Neil, Robert A.: *See*—
Wells, Charles A.; O'Neil, Robert A.; and Wilson, Michael C., 3,841,478.
O'Neill, Wilbur J., to Westinghouse Electric Corporation. Fluid pressure control apparatus. 3,841,348, Cl. 137-494.000.
Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research Development Company. Composition containing higher fatty acids. 3,842,106, Cl. 260-413.000.
Oppenlaender, Knut: *See*—
Belde, Horst; Oppenlaender, Knut; Daubach, Ewald; and Fikentscher, Rolf, 3,841,888.
Opprecht, Paul. Method of electric seam resistance welding. 3,842,235, Cl. 219-83.000.
Opti-Holding AG: *See*—
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,840,946.
Original Equipment Manufacturing Limited: *See*—
Parisotto, Antonio; and Nemis, James, 3,841,717.
Orloff, Arthur: *See*—
Stone, Guthrie B.; Orloff, Arthur; and Wicksall, Guy J., 3,841,463.
Osada, Isao: *See*—
Fukuda, Yasuhiko; and Osada, Isao, 3,842,011.
Osawa, Sadao: *See*—
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,841,893.
Osborne, Paul Wray, to Bell Telephone Laboratories, Incorporated. Analog-to-digital converter with adaptive feedback. 3,842,415, Cl. 340-347.0ad.
Osborne, Philip S., to Oklahoma Publishing Company, The. Process for the manufacture of charcoal. 3,841,974, Cl. 201-2.500.
Osheroff, Gene W., to Fluidtech Corporation. Induction terminal unit for air-conditioning systems. 3,841,392, Cl. 165-22.000.
Oster, David Lawrence: *See*—
Periat, Douglas Marion; and Oster, David Lawrence, 3,841,854.
Ota, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Dressing device. 3,841,296, Cl. 125-11.0ph.
Ota, Nobuyoshi, to Nippondenso Co., Ltd. Thermo-operation type transfer valve. 3,841,551, Cl. 236-86.000.
Otten, Leonard E.: *See*—
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, 3,840,978.
Otto Sauer, Achsenfabrik: *See*—
Schaeff, Friedrich, 3,841,655.
Outboard Marine Corporation: *See*—
Arff, Uwe F.; and Edwards, Gordon J., 3,840,991.
Strang, Charles D., 3,841,257.
Overhoff, Theodor; and Stupp, Hermann-Josef, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of distinguishing between fuel and/or breeder elements intended for or inserted in a nuclear reactor. 3,841,757, Cl. 356-85.000.
Overton, Clifton E., to Overton Engineering. Water purification system. 3,841,483, Cl. 210-87.000.
Overton Engineering: *See*—
Overton, Clifton E., 3,841,483.
Owen, James; and Hoven, El Don L., to Ford Industries, Inc. Frequency-selectrive ringing current sensor for telephone. 3,842,216, Cl. 179-84.001.
Owen, William J.; and Cooper, Bryan Ewart, to Midland Silicones Limited. Polypropylene. 3,842,153, Cl. 264-211.000.
Owens-Corning Fiberglas Corporation: *See*—
Froberg, Magnus L.; and Maddux, John F., 3,842,180.
Higginbotham, James M.; and Wardlaw, William G., Sr., 3,841,853.
Wolf, Warren W., 3,841,882.
Owens-Illinois, Inc.: *See*—
Banyas, John D.; and Wallington, Frederick L., 3,841,687.
Cuniberti, Mario, 3,841,497.
Eggert, Noel B., 3,841,468.
Florence, Jack M.; and Smith, William E., 3,841,927.
Meyer, Richard W., 3,841,316.
Myers, John D., 3,842,368.
Planchock, Jerry L.; Stewart, Daniel R.; and Brock, Thomas W., 3,841,950.
Oxy Metal Finishing Corporation: *See*—
Galloway, James H., 3,842,336.
Yee, Gim, 3,841,982.
Oy Tampella AB: *See*—
Lehtonen, Lasse, 3,841,722.
Saiha, Erik Viktor, 3,841,961.
Ozimec, Stephen, to Comtec Economation. Soldering machine. 3,841,546, Cl. 228-6.000.
Ozutsumi, Minoru: *See*—
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,842,030.
Packaging Corporation of America: *See*—
Curley, William J., 3,841,548.
Padgitt, Kenneth W.; and Wade, Donald H., to Borg-Warner Corporation. Method and apparatus for obtaining accurate readout of breath testers. 3,842,345, Cl. 324-71.00r.
Page, Robert E. Pulse activity indicator. 3,841,314, Cl. 128-2.50p.
Palazzolo, Salvatore E.; and Hetrick, Richard R., to Westinghouse Electric Corporation. Bonded weather resistant decorative laminate with slightly grained acrylic surface. 3,841,956, Cl. 161-248.000.
Pallant, Jon W., to Metalphoto Corporation: a subsidiary of Horizons Research Incorporated. Method of producing colored aluminum. 3,841,891, Cl. 117-8.500.
Palm, Theodore O.: *See*—
Pepe, David L.; Palm, Theodore O.; and Johnson, Frank B., 3,841,575.
Palma, James D.: *See*—
Morgan, Robert E.; and Palma, James D., 3,841,803.
Paluszny, Antoni: *See*—
Kovach, James T.; and Paluszny, Antoni, 3,841,720.
Pandjiris Weldment Co., The: *See*—
Cooper, Cleveland N., 3,841,647.
Pao, Yoh-Han; and Claspy, Paul C., to Data Optics Corporation, mesne. Extremely fast gaseous stark field light modulators and Q-switched laser for the infrared wavelength region. 3,842,372, Cl. 332-7.510.
Pappas, James J.; Jacobson, Norman; and Kresge, Edward N., to Esso Research and Engineering Company. Oil and fuel compositions epoxidized terpolymer or derivative. 3,842,010, Cl. 252-51.50r.
Paraho Corporation: *See*—
Jones, John B., Jr.; and Reeves, Adam A., 3,841,992.
Paraskevakos Electronics & Communication, Inc.: *See*—
Paraskevakos, Theodoros G., 3,842,208.
Paraskevakos, Theodoros G., to Paraskevakos Electronics & Communication, Inc. Sensor monitoring device. 3,842,208, Cl. 179-5.00r.
Parchen, Wilheim Ernst Paul: *See*—
Van Stratum, Antonius Johannes Alberta; Verest, Franciscus Johannes; and Parchen, Wilheim Ernst Paul, 3,842,309.
Pare, Robert Lee. Movable traffic lane divider. 3,841,775, Cl. 404-11.000.
Parisotto, Antonio; and Nemis, James, to Original Equipment Manufacturing Limited. Track slide assembly. 3,841,717, Cl. 305-25.000.
Park, Yong S.; and Pekosh, Raymond J., to Zenith Radio Corporation. Method for grading the screen of a color tube. 3,841,875, Cl. 96-36.100.
Park-Ohio Industries, Inc.: *See*—
Seyfried, Richard F., 3,842,234.
Parker, Calvin E., Sr., to Bethlehem Steel Corporation. Apparatus and method for obtaining uniform coating thickness. 3,841,900, Cl. 117-102.00m.

Parkinson Cowan Appliances Limited: *See—*
Hughes, John M. Kyffin; Harding, Brian; and Lake, Graham Albert John, 3,841,300.
Parkinson, John; Eibich, Alfred; and Ronald, Thomas T., to Parmatic, Inc. Differential pressure indicator. 3,841,259, Cl. 116-70.000.
Parks-Cramer Company: *See—*
Ford, Maynard; and Lee, Charles D., Jr., 3,841,076.
Parmatic, Inc.: *See—*
Parkinson, John; Eibich, Alfred; and Ronald, Thomas T., 3,841,259.
Parsons, Hubert J., to Hardinge Brothers, Inc. Through hole machine tool collet. 3,841,645, Cl. 279-1.00a.
Pashak, John F., to Dow Chemical Company, The. Method of extruding consumable anodes with anodized core-cladding interface. 3,841,127, Cl. 72-47.000.
Pasman, Hermanus Johannes: *See—*
Dijkstra, Fokke Cornelius; Groothuizen, Theodorus Maria; Pasman, Hermanus Johannes; and Van De Putte, Tonny, 3,842,181.
Patent-Treuhand-Gesellschaft fur elektrische Glukhampen mbH: *See—*
Dobrusskin, Alexander; and Leyendecker, Helmut, 3,842,307.
Paul, Peter, Electronics: *See—*
Allen, Walter E., 3,840,959.
Paulin, Kenneth H.; and Wolfe, Merritt W., to Goodyear Tire & Rubber Company. Pneumatic tire and method of retreading. 3,841,376, Cl. 152-361.00r.
Pauvlik, Jeanne Marie: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,842,069.
Pavlushkin, Nikolai Mikhaiovich: *See—*
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.
Paymaster Corporation, The: *See—*
Gopperton, ARdath A., 3,842,410.
Pealabon, Andre E., to ANF Frangeco S.A. Protection system for turbo-generator starters. 3,842,290, Cl. 307-116.000.
Pearl, David Raymond: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,841,187.
Pearson, Robert P., to Honeywell Inc. Strain gauge transducer signal conditioning circuitry. 3,841,150, Cl. 73-88.50r.
Peel, Richard E.; and Singh, Harkrishan, to Ford Motor Company. Vehicular three-point seat belt system. 3,841,659, Cl. 280-150.0sb.
Peilie, Jean Marie Raymond, to Societe Industrielle de Stratifies. Equipment for the continuous production of panels of synthetic material. 3,841,811, Cl. 425-115.000.
Pekosh, Raymond J.: *See—*
Park, Yong S.; and Pekosh, Raymond J., 3,841,875.
Pelezo, Chris A.: *See—*
Dobinson, Frank; and Pelezo, Chris A., 3,842,028.
Peng, John. Convertible modular furniture-luggage units. 3,841,727, Cl. 312-111.000.
Pennsylvania Engineering Corporation: *See—*
Fisher, Howard M.; and Montgomery, Harry T., 3,841,617.
Penzl, Reinhold: *See—*
Schmidtke, Martin; Reuttenauer, Winfried; and Penzl, Reinhold, 3,840,986.
Pepe, David L.; Palm, Theodore O.; and Johnson, Frank B., to Davis Electric Company. Stock snagging mechanism for continuous winding machine. 3,841,575, Cl. 242-25.00a.
Perez-Mendez, Victor, to University of California, The Regents of the. Radiation camera and delay line readout. 3,842,373, Cl. 333-31.00r.
Periat, Douglas Marion; and Oster, David Lawrence, to Johns-Manville Corporation. Apparatus for heating a glass fiber forming spinner. 3,841,854, Cl. 65-12.000.
Perkins, William L. Garden tool. 3,841,414, Cl. 172-371.000.
Perl, Richard L., to Tappan Company, The. Gas igniter. 3,842,319, Cl. 317-98.000.
Permutit Company Inc., The, mesne: *See—*
Malkin, William J., 3,841,485.
Peroutky, Donald C.; and Stein, Charles R., to General Electric Company. Apparatus including random access positioning means. 3,841,747, Cl. 353-27.000.
Petersen, Carsten Georg Otto: *See—*
Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, 3,841,800.
Petersen, Poul, to Danfoss A/S. Device for holding and contacting thermally loaded ceramic resistors in a case. 3,842,188, Cl. 174-52.00r.
Petersen, Walter F.; and Gittings, John B., to Gold Medal, Inc. Collapsible bar. 3,841,728, Cl. 312-140.200.
Petrille, Dennis G.: *See—*
Heffern, Edward W.; Petrille, Dennis G.; and Karll, Robert E., 3,842,095.
Pettersson, Jarl Sune, to Ingenjorsfirman Gradient, Birgit and Harry Rilbe. Optical arrangement for recording a variable light absorbance in objects also having a variable optical thickness. 3,841,762, Cl. 356-203.000.
Pfister, Herbert R., to Black and Decker Manufacturing Company, The. Portable jig-saw and spindle sander. 3,841,416, Cl. 173-31.000.
Phelps Dodge Industries, Inc.: *See—*
Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., 3,842,192.
Phelps, Richard W.; and Tetro, Richard S., to Black Clawson Company, The. Continuous winding apparatus for web material. 3,841,577, Cl. 242-56.00a.
Philco-Ford Corporation: *See—*
Rootsey, James V., 3,842,421.
Philippaerts, Herman Adelbert: *See—*
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.
Phillips, Brian Leslie: *See—*
Thompson, Michael Ainley; and Phillips, Brian Leslie, 3,841,238.
Phillips, David C.: *See—*
Melamed, Nathan T.; and Phillips, David C., 3,842,369.
Phillips Petroleum Company: *See—*
Bennett, Richard J., 3,841,554.
Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., 3,842,033.
Campbell, Robert W., 3,842,045.
Cleary, James W., 3,842,044.
Hsieh, Henry L., 3,842,145.
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,842,140.
Siedenstrang, Roy W., 3,841,899.
Thompson, James K.; and Harrell, Melvin R., 3,841,054.
Piazza, Nicholas F.; and Siano, Vincent. Playing card selection apparatus. 3,841,637, Cl. 273-141.00a.
Pic-A-Tent-Top Carrier, Inc.: *See—*
Lund, Kerry G.; and Porter, Leo A., 3,841,603.
Pickard, Robert E. Protective ear covering. 3,841,325, Cl. 128-151.000.
Picker Corporation: *See—*
Herrick, Norman A., 3,842,280.
Pierce, William C., to Pitts Industries, Inc. Double clutch for vehicle air conditioning compressor. 3,842,378, Cl. 335-220.000.
Piercy, Paul L. Compartment closure and supplemental vehicle body. 3,841,690, Cl. 296-10.000.
Pierrat, Michel A., to Automatic Radio Mfg. Co., Inc. Power-refrigeration apparatus for recreational vehicles and the like. 3,841,108, Cl. 62-236.000.
Pierrefitte-Auby: *See—*
Chahvekilian, Edgar; and Plichon, Jean Marc, 3,842,138.
Pike, Daniel E., to Air Pollution Industries, Incorporated. Gas cleaning apparatus. 3,841,061, Cl. 55-223.000.
Pilch, John S., to Ware Machine Works, Inc. Foot pedal valve control for earth-moving equipment. 3,841,172, Cl. 74-512.000.
Pillsbury Company, The: *See—*
Reid, Francis R.; and Gwiazdon, Rodney K., 3,840,966.
Pinkham, Jesse R.; Cockman, Arthur G.; and Joyce, Jerry Ray, to Reynolds, R. J., Tobacco Company. Tobacco harvester. 3,841,071, Cl. 56-27.500.
Pionte, Donald M., to General Motors Corporation. Clutch lash and wear adjustment mechanism. 3,841,454, Cl. 192-111.00r.
Piot, Jacques Claude Michel. Non polutting chimney. 3,841,207, Cl. 98-58.000.
Pirk, Hans: *See—*
Muller, Henricus; Pirk, Hans; and Hackstein, Karl, 3,842,155.
Pitre, Davide: *See—*
Felder, Ernst; and Pitre, Davide, 3,842,124.
Pitts Industries, Inc.: *See—*
Pierce, William C., 3,842,378.
Pitts, Robert W., Jr.: *See—*
Arnold, Dan M.; and Pitts, Robert W., Jr., 3,842,264.
Pitts, Robert W., Jr., to Texaco Inc. Pulsed neutron well logging techniques with background radiation removal. 3,842,265, Cl. 250-270.000.
Pivar, Stuart, to Rototron Corporation. Apparatus for the rotational molding of thermoplastic articles. 3,841,821, Cl. 425-434.000.
Planchock, Jerry L.; Stewart, Daniel R.; and Brock, Thomas W., to Owens-Illinois, Inc. Glasses and glass-ceramics and products made therefrom. 3,841,950, Cl. 161-55.000.
Plasti-Vac, Inc.: *See—*
Diamond, Harvey J., 3,841,819.
Platner, Warren; Whitwam, Ronald L.; Kolk, Stephen B.; and Ursul, Earl G., to Steelcase Inc. Chair. 3,841,704, Cl. 297-458.000.
Pleiss, Bernard J., Jr.; and Surmacz, Theodore J., to A. O. Smith Corporation. Receptacle for securing a sensing element within electrical windings. 3,842,297, Cl. 310-68.00c.
Plempel, Manfred: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,842,078.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,175.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,842,176.
Plichon, Jean Marc: *See—*
Chahvekilian, Edgar; and Plichon, Jean Marc, 3,842,138.
Plymate, Clay D. Variable tilt collapsible shelf assembly. 3,841,237, Cl. 108-6.000.
Pochop, Merle E.: *See—*
Finger, John F.; and Pochop, Merle E., 3,841,273.
Podesva, Ctirad; and Vagi, Kitty, to Delmar Chemicals Limited. 2-(N-Propargul)-phthalimdoacetamido-5-halobenzophenones. 3,842,094, Cl. 260-326.00n.
Pointud, Marie-Louise: *See—*
Chenebault, Pierre; and Pointud, Marie-Louise, 3,842,283.
Poklekowski, Helmut: *See—*

Huttenbrauck, Herbert; Poklekowski, Helmut; and Soliman, Mustafa, 3,841,706.

Polaroid Corporation: *See—*
Hudspeth, William, 3,842,430.
Land, Edwin H., 3,841,879.

Pollet, Robert Joseph: *See—*
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.

Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Vandenabeele, Hubert, to Agfa-Gevaert N.V. High temperature processing of photographic silver halide elements. 3,841,878, Cl. 96-66.300.

Pollner, Rudolf: *See—*
Friese, Karl-Hermann; Geier, Heinz; Pollner, Rudolf; and Schallert, Heino, 3,841,987.

Polosky, Ronald J.: *See—*
Conner, Jessee R.; and Polosky, Ronald J., 3,841,102.

Polysius AG: *See—*
Korting, Reinhard, 3,841,829.

Pommerening, Uwe A.: *See—*
Russell, Stanley L.; Gueldenpfenning, Klaus; and Pommerening, Uwe A., 3,842,215.

Pomplun, Emil: *See—*
Buschmann, Hans; Mehlhart, Erwin; Schwibbe, Valfred; and Pomplun, Emil, 3,841,459.

Porta Systems Corp.: *See—*
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, 3,842,218.

Porter, Alan Sidney: *See—*
Collier, John Richard; and Porter, Alan Sidney, 3,842,093.

Porter, Leo A.: *See—*
Lund, Kerry G.; and Porter, Leo A., 3,841,603.

Post, Leo B.: *See—*
Grindstaff, Donald A.; Steinreich, Joseph S.; and Post, Leo B., 3,840,996.

Post Office, The: *See—*
Midwinter, John E., 3,841,731.

Potlatch Corporation: *See—*
Sellors, Thomas J., 3,841,298.

Potter, Peter Rex. Transparency viewing cassette unit. 3,840,973, Cl. 29-434.000.

Povey, Edmund H., to Doble Engineering Company. Bridge circuit for measuring dielectric properties of insulation. 3,842,344, Cl. 324-54.000.

Powell, Leroy H. Automatic nut cracker apparatus. 3,841,212, Cl. 99-571.000.

Powers, Joseph William, Jr.; and Towner, George H., to Northrop Corporation. Radar data map correlator. 3,842,251, Cl. 235-181.000.

Pratt, Robert E., to Bray Oil Company. Polymerization process. 3,842,134, Cl. 260-683.15b.

Precision Flexmold, Inc.: *See—*
Putzer, Raymond M.; and Maurino, William J., 3,841,822.

Prentice, James S.: *See—*
Lohkamp, Dwight Theodore; and Prentice, James S., 3,841,953.

Pretty Products, Inc.: *See—*
Wells, Charles A.; O'Neil, Robert A.; and Wilson, Michael C., 3,841,478.

Prezewowsky, Klaus: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,842,105.

Prince, Leland S.: *See—*
Yarnell, Neil K.; and Prince, Leland S., 3,842,248.

Procter, Alan R.; Styan, Garrick E.; and Vinje, Magnus G., to Mac Millan Bloedel Limited. Hydrogen sulfide pretreatment of lignocellulosic materials in alkaline pulping processes. 3,841,962, Cl. 162-30.000.

Proctor & Gamble Company, The: *See—*
McCarthy, Charles J.; McCarthy, Jerome P.; and McCarthy, Robert F., 3,841,623.

Production Technology Inc.: *See—*
Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., 3,841,201.

Production Technology Inc., mesne: *See—*
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,840,979.

Proffit, John D. Retractable trailer tongue stand. 3,841,663, Cl. 280-475.000.

Prokop, Jaroslav: *See—*
Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, 3,842,151.

Proximity Devices, Inc.: *See—*
Kohler, Robert D.; Sidlauskas, David P.; and Walton, Charles A., 3,842,246.

Pruchno, Albert A.: *See—*
Freismuth, Richard J.; and Pruchno, Albert A., 3,841,612.

Purcell, Robert J.; and Wehr, Kenneth E., to Caterpillar Tractor Co. Triangular track resilient bogie suspension. 3,841,424, Cl. 180-9.500.

Pusztaszeri, Stephen F. Hydrogen transfer polymerization of 2-pyrrolidone with anionic catalyst. 3,842,047, Cl. 260-78.00p.

Putzer, Raymond M.; and Maurino, William J., to Precision Flexmold, Inc. Seamless article molding apparatus. 3,841,822, Cl. 425-440.000.

Pyatnitskaya, Varvara Vasilievna: *See—*

Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.

Quaker Oats Company, The: *See—*
Reiling, Victor G., Jr., 3,841,018.

Quillevere, Herve Alain: *See—*
Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, 3,841,565.

Quinn, John N. Crushing plant. 3,841,570, Cl. 241-78.000.

Quirk, John Benjamin, to General Electric Company. Microwave amplifier. 3,842,361, Cl. 330-56.000.

Rabow, Gerald, to International Telephone and Telegraph Corporation. Step tacking system. 3,842,420, Cl. 343-117.00r.

Raceway Components, Inc., mesne: *See—*
Kohaut, John E., 3,841,673.

Rachwal, Stanley. Die changing apparatus. 3,841,141, Cl. 72-446.000.

Rader Companies, Inc.: *See—*
Boubel, Richard W., 3,841,145.

Radlauer, Marvin I.: *See—*
Kaye, Morton; and Radlauer, Marvin I., 3,841,745.

Rakestraw, Robert H. Method and apparatus for orienting and harvesting tobacco leaves. 3,841,068, Cl. 56-1.000.

Ram, Michael J.; and Riggs, John P., to Celanese Corporation. Carbon filaments capable of substantial crack diversion during fracture. 3,841,079, Cl. 57-140.00r.

Rambauske, Werner R.; and Grabowski, John J., to Raytheon Company. Laminated mirror. 3,841,737, Cl. 350-288.000.

Ramsey, James B.: *See—*
Anderson, Paul T.; and Ramsey, James B., 3,842,383.

Rank Xerox, Ltd., mesne: *See—*
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,841,893.

Rankin, Howard C.: *See—*
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., 3,842,405.

Ranks Hovis Mc Dougall, Limited: *See—*
Emery, Anthony Nicholas; Barker, Sidney Alan; and Novais, Julio Maggioly, 3,841,969.

RAPENA Patent- und Verwaltungs *See—*
Falkner, Raimund; and Grune, Hu...z, 3,841,134.

Rasskopf, Klaus: *See—*
Liebl, Helmuth; and Rasskopf, Klaus, 3,842,269.

Ratcliff, Bruce E.: *See—*
Ratcliff, Ralph A.; and Ratcliff, Bruce E., 3,842,426.

Ratcliff, Ralph A.; and Ratcliff, Bruce E. Latching over-center type load binder. 3,842,426, Cl. 254-78.000.

Raw, Peter Michael; and Llewellyn, Rees Jenkin, to British Insulated Callerder's Cabes Limited. Aluminium alloy conductor wire. 3,842,185, Cl. 174-23.00r.

Ray, Thelma L. Liquid blacktop sealer machine. 3,841,779, Cl. 404-111.000.

Ray-Chaudhuri, Dilip K.: *See—*
Thompson, James M.; Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,841,902.

Raymond Lee Organization, Inc., The: *See—*
Mavrofrides, Dennis A., 3,841,634.
Murphy, Adron, 3,841,176.

Raytheon Company: *See—*
Rambauske, Werner R.; and Grabowski, John J., 3,841,737.

Razzano, John S., to General Electric Company. Process for producing octaphenyltetracyclosiloxane. 3,842,110, Cl. 260-448.0ze.

RBP Chemical Corporation: *See—*
Dixon, Charles H., III, 3,841,905.

RCA Corporation: *See—*
Chiang, Yuen-Shenk, 3,841,904.
Clemens, John Kaufmann, 3,842,217.
Clemens, Jon Kaufmann, 3,842,194.
Feldstein, Nathan; and Lancsek, Thomas Stephen, 3,841,881.
Gibson, John James, 3,842,199.
Southgate, Peter David, 3,842,189.
Southgate, Peter David, 3,842,276.

Redeco, Inc., mesne: *See—*
Schwartz, Ralph E., 3,841,515.

Redy-Tow, Inc.: *See—*
Smith, William M., 3,841,506.

Reedy, Donald G., to Special Sports Products Corporation. Hinged cleat for snowmobile drive track. 3,841,167, Cl. 74-231.00r.

Rees, Richard W., to American Home Products Corporation. Homo-(Tyr^3)-LRF and Thr^4-LRF and intermediates. 3,842,065, Cl. 260-112.500.

Reeves, Adam A.: *See—*
Jones, John B., Jr.; and Reeves, Adam A., 3,841,992.

Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-tritylimidazoles as antifungal agents. 3,842,175, Cl. 424-273.000.

Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-tritylimidazoles as antifungal agents. 3,842,176, Cl. 424-273.000.

Regents of the University of California, The: *See—*
Henderson, Jerald M.; and Shawver, Bruce M., 3,841,461.

Regie Nationale de Usines Renault: *See—*

Dera, Alain; Fayolle, Michel; and Maistrelli, Roger, 3,841,681.
Regie Nationale Des Usines Renault: *See—*
Lombard, Claude Edmond, 3,842,299.
Rehfeld, Fred L. J., to O'Dell Manufacturing, Inc. Electromagnetic self-riming pump. 3,841,798, Cl. 417-419.000.
Reichhold Chemicals, Inc.: *See—*
Chang, Yun Ger; and Bailey, Philip S., 3,842,129.
Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Dalibor, Horst; Gutte, Richard; and Stenzel, Gunter, 3,842,133.
Reid, Francis R.; and Gwiazdon, Rodney K., to Pillsbury Company, The. Apparatus for inserting pressfit cups into can bodies. 3,840,966, Cl. 29-208.00b.
Reid, William R., Jr., to Imodco, Inc. Swivel unit for mooring and cargo transfer system. 3,840,927, Cl. 9-8.00p.
Reiling, Victor G., Jr., to Quaker Oats Company, The. Toy building with flight deck and rotatable baggage platform. 3,841,018, Cl. 46-12.000.
Reinsma, Harold L., to Caterpillar Tractor Company. Augmented crescent seal with compensating load ring. 3,841,718, Cl. 305-11.000.
Renna, Fernando, 20% to Lee, Raymond, Organization, Inc., The. Hockey player training device. 3,841,630, Cl. 273-1.00b.
Rennard, Raymond J., Jr.: *See—*
Kehl, William L.; and Rennard, Raymond J., Jr., 3,842,139.
Research Corporation: *See—*
Luzzi, Louis Anthony; Whitworth, Clyde Weydell; and Jun, Hung Won, 3,842,170.
Restaino, Alfred J.; and Bristowe, William W., to ICI America Inc. Process for recovering hydrocarbon using polymer obtained by radiation polymerization. 3,841,401, Cl. 166-247.000.
Reuttenauer, Winfried: *See—*
Schmidtke, Martin; Reuttenauer, Winfried; and Penzl, Reinhold, 3,840,986.
Rex Chainbelt Inc.: *See—*
Dieringer, Andrew M.; and Katcha, Frank F., 3,841,221.
Rey, Maurice; and Formanek, Victor, to Le Nickel and Societe Miniere et Metallurgique de Penarroya. Method for producing nickel by segregation of nickel oxide ores. 3,841,864, Cl. 75-101.00r.
Reynolds Metals Company: *See—*
Scott, Irvin C., Jr.; and Swenck, George F., 3,841,130.
Zinnbauer, Frederick W.; and Ferner, Jack C., 3,841,138.
Reynolds, R. J., Tobacco Company: *See—*
Pinkham, Jesse R.; Cockman, Arthur G.; and Joyce, Jerry Ray, 3,841,071.
Reynolds, Robert J.; and Deyerl, Herman F. Roadbed on which electrically powered vehicles can be operated. 3,841,556, Cl. 238-10.00e.
Reynolds, Roy; and Clark, Raymond, to Applied Power Inc. Tilt cab latch device. 3,841,693, Cl. 296-35.00r.
Reystone Consolidated Industries, Inc.: *See—*
Burbidge, George W., 3,840,947.
Reznik, Boris Grigorievich: *See—*
Sljusarev, Jury Evgenievich; Reznik, Boris Grigorievich; and Galperin, Jury Aronovich, 3,841,788.
Rheinstahl AG: *See—*
Ludewig, Manfred; and Romer, Hans-Konrad, 3,841,291.
Rheinstahl Aktiengesellschaft: *See—*
Hess, Hans, 3,841,232.
Rhone-Progil: *See—*
Rieux, Jean Philippe; and Lehureau, Jean, 3,842,024.
Rhudy, John S.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 3,841,402.
Ricardo & Co. Engineers (1927) Limited: *See—*
Bruce, Glenister Stuart, 3,841,203.
Rice, Kenneth T., Jr., to Westinghouse Electric Corporation. Apparatus and method for shaping end turns of coils in dynamo-electric machine cores. 3,841,133, Cl. 72-168.000.
Richardson, Gary H.: *See—*
Gandhi, Niranjan R.; and Richardson, Gary H., 3,841,834.
Richardson, Stanley Hamilton, to Union Carbide Corporation. Vinyl chloride polymer powders. 3,842,027, Cl. 260-31.80r.
Richardson-Merrell Inc.: *See—*
Sill, Arthur D., 3,842,100.
Richeson, Harold E., to L. B. Foster Company. Apparatus for assembling rail-tie panels on assembly table. 3,841,222, Cl. 104-17.00r.
Rickard, Corwin L.: *See—*
Fortescue, Peter; and Rickard, Corwin L., 3,841,100.
Ricoh Co., Ltd.: *See—*
Hasegawa, Toru, 3,841,215.
Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, 3,841,750.
Kawa, Ryuichi, 3,841,583.
Yanagawa, Nobuyuki, 3,841,480.
Rieckmann, Peter: *See—*
Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,841,262.
Riede, Gerhard: *See—*
Hagstrom, Olov; and Riede, Gerhard, 3,841,491.
Riedel, Oswald: *See—*
Koehler, Waldemar; Riedel, Oswald; Scherer, Herbert; and Schlereth, Georg, 3,841,155.
Rieux, Jean Philippe; and Lehureau, Jean, to Rhone-Progil. Polyepoxyether and bitumen compositions. 3,842,024, Cl. 260-28.000.
Riggs, John P.: *See—*
Ram, Michael J.; and Riggs, John P., 3,841,079.
Ring, Richard J.: *See—*
Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., 3,841,826.
Rinker, Kurt H., to Kelsey-Hayes Company. Hold-down assembly for sliding caliper type disk brake. 3,841,445, Cl. 188-73.500.
Rion, Richard G.; and Gazo, Louis J., Jr., to Ferro Corporation. Electrophoretic deposition of ceramic coatings. 3,841,986, Cl. 204-181.000.
Rippon, John Roy: *See—*
Davies, Emrys; and Rippon, John Roy, 3,841,867.
Rite Autotronics Corporation: *See—*
Nielsen, Tage, 3,841,287.
Ritter, Nicholas H. Routing device. 3,841,368, Cl. 144-134.00r.
Roach, Ted L.: *See—*
Lunsford, Marvin C., Jr.; Bowers, David T.; Caldwell, Sherwood M.; Davis, Leonard P.; and Roach, Ted L., 3,841,836.
Robertson, Melvin F.: *See—*
Maiste, Arved; and Robertson, Melvin F., 3,841,536.
Robin, Maurice. Time display mechanism. 3,841,086, Cl. 58-125.00c.
Robin Products: *See—*
Brown, Martin M.; and Krawczak, Lawrence, 3,841,044.
Robinson, Daniel E.; and Schmidt, Robert A., to General Cable Corporation. Apparatus for detection of shield imperfections in electrical conductors. 3,841,810, Cl. 425-113.000.
Robinson, Glenn: *See—*
Larralde, Edward; and Robinson, Glenn, 3,841,607.
Robinson, Roland L.; Boltz, Chadwick C.; Everson, Evan P.; and Mac Pherson, Douglas E., to Walter Kidde & Company, Inc. Vehicle actuated pneumatic tube system for motor banking. 3,841,584, Cl. 243-19.000.
Robinson, Thomas C.: *See—*
Kitrilakis, Sotiris; and Robinson, Thomas C., 3,841,837.
Roche, Edward Noland. Seamless edge lamination apparatus. 3,841,369, Cl. 144-136.00r.
Rocher, George, to Metallurgical Exoproducts Corporation. Protective alloy addition apparatus. 3,841,616, Cl. 266-34.00t.
Rockwell International Corporation: *See—*
Craig, John M., 3,841,929.
Rodach, Alexander, to Frau Irma Ungerer. Apparatus for braking a plurality of slit strips as the same are wound on a reel. 3,841,580, Cl. 242-75.200.
Roger Demchak: *See—*
Daniels, Donald H., 3,841,168.
Rogers, Edward J.: *See—*
Bernatt, Joseph; and Rogers, Edward J., 3,842,381.
Rogerson, Jerry B., to Ford Motor Company. Air supply valve. 3,841,282, Cl. 123-97.00b.
Rohe Scientific Corp.: *See—*
Natelson, Samuel, 3,841,838.
Rohloff, Bennett W. Seed treating device for drill fill augers and the like. 3,841,263, Cl. 118-303.000.
Rohr Industries, Inc.: *See—*
Maison, Richard L., 3,841,226.
Rollei-Werke Franke & Heidecke: *See—*
Sobotta, Reinhard, 3,841,749.
Rolling Systems, Inc.: *See—*
Fitzgerald, Mack A., Jr.; Scott, Carl W.; and Scott, Carl W., Jr., 3,840,935.
Romanovsky, Mark Bentsionovich: *See—*
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.
Romer, Hans-Konrad: *See—*
Ludewig, Manfred; and Romer, Hans-Konrad, 3,841,291.
Ronald, Thomas T.: *See—*
Parkinson, John; Eibich, Alfred; and Ronald, Thomas T., 3,841,259.
Ronner, Fritz, to Buss AG. Mixing and kneading device. 3,841,611, Cl. 259-102.000.
Rooney, Clarence Stanley: *See—*
Williams, Haydn Windsor Richard; and Rooney, Clarence Stanley, 3,842,087.
Roosen, Raymond Albert: *See—*
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.
Rootsey, James V., to Jewell, Edward S. and Philco-Ford Corporation. Multiple band frequency selective reflecotrs. 3,842,421, Cl. 343-909.000.
Roper Corporation: *See—*
Dankel, Douglas D.; and Herscher, Lee R., 3,841,571.
Rosborough, Robert S., Jr.; and Wright, Luther M., to Eastman Kodak Company. Method of splicing and identifying a web. 3,841,934, Cl. 156-157.000.
Rosenbaum, Walter Steven: *See—*
Ett, Allen Harold; and Rosenbaum, Walter Steven, 3,842,402.
Ross, Roy C.: *See—*
Drone, Gary A.; and Ross, Roy C., 3,841,450.
Rostgo International Corporation, mesne: *See—*
Stigler, Joseph T., 3,841,363.
Rothe, Werner: *See—*

Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,841,262.

Rothrock, Elmer Weyman: *See—*
Kircik, Willis James; Rothrock, Elmer Weyman; and Johnson, Paul Richard, 3,841,253.

Rototron Corporation: *See—*
Pivar, Stuart, 3,841,821.

Rousseau, Gilbert James: *See—*
Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, 3,841,565.

Rousseau, Roy Settle: *See—*
Engelhardt, John Nicol; and Rousseau, Roy Settle, 3,841,569.

Roussel Uclaf: *See—*
Martel, Jacques; and Buendia, Jean, 3,842,177.

Royal Industries, Inc.: *See—*
Sosalla, Harry, 3,841,412.

Ruberg & Renner GmbH: *See—*
Bisewski, Alfons, 3,841,169.

Rubin, Lawrence M.: *See—*
Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 3,841,744.

Rubin, Lawrence M.; Eaton, Richard Rochester; and Chapin, Peter L., 25% to Rubin, Lawrence M., 25% to Eaton, Richard, 25% to Chapin, Peter L. and 25% to Feingold, Stanley. Multiple slide projector control system. 3,841,744, Cl. 353-15.000.

Rubinich, Anthony. Apparatus for applying advertising bands on cylindrical containers. 3,841,940, Cl. 156-367.000.

Rucker Company, The: *See—*
Childs, Willard D., 3,841,770.

Rud, Svetlana Ivanovna: *See—*
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.

Ruffing, Charles R.: *See—*
Simmonds, Leonard B.; and Ruffing, Charles R., 3,842,303.

Rundell, Dan Joseph: *See—*
Sargisson, Donald Farley; and Rundell, Dan Joseph, 3,841,091.

Runyan, Clark M.: *See—*
Grochowicz, Peter S., 3,841,756.

Russell, Allen S.; Jarrett, Noel; and Stoup, Philip T., to Aluminum Company of America. Production of aluminum chloride. 3,842,163, Cl. 423-496.000.

Russell, John R.: *See—*
Troutner, Arthur L.; Russell, John R.; Johnson, Alan W.; and Johnson, Clifford R., 3,841,945.

Russell, Kenneth L., to Cities Service Oil Company. Control of colligative properties of drilling mud. 3,841,419, Cl. 175-40.000.

Russell, Michael King. Directional drilling means. 3,841,420, Cl. 175-45.000.

Russell, Stanley L.; Gueldenpfenning, Klaus; and Pommerening, Uwe A., to Stromberg-Carlson Corporation. Private branch exchange operator trunk group selection means. 3,842,215, Cl. 179-27.00d.

Russey, James W., to Caterpillar Tractor Company. Instrument panel guard. 3,841,431, Cl. 180-90.000.

Rutten, Michael R.: *See—*
Balamuth, Lewis; Rutten, Michael R.; and Meyer, Robert, 3,840,932.

Ryan, John W.; Kossoff, Joseph; and Hartman, Jack E., to Mattel, Inc., mesne. Facial animating means for a figure toy. 3,841,020, Cl. 46-118.000.

Ryan, Roger C., to Nalco Chemical Company. Secondary oil recovery. 3,841,399, Cl. 166-300.000.

Ryff, Anthony S.: *See—*
Daykin, Theodore W.; and Ryff, Anthony S., 3,842,300.

Ryff, Anthony S., to Ford Motor Company. Method of manufacture of a dynamoelectric machine laminated armature structure. 3,840,983, Cl. 29-598.000.

Rynsky, William. Jump seat safety bar. 3,841,409, Cl. 169-24.000.

S & C Electric Company: *See—*
Bernatt, Joseph; and Rogers, Edward J., 3,842,381.

Sabagonis, Walter J. Fishing accessory. 3,841,013, Cl. 43-43.150.

Saeki, Haruji, to Shionogi & Co., Ltd. Apparatus for chamfering tablets. 3,841,029, Cl. 51-128.000.

Safeway Products, Inc.: *See—*
Miller, Robert C., 3,840,985.

Sagami Chemical Research Center: *See—*
Hamamoto, Yoshito; and Okada, Tomio, 3,842,115.
Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshihiko; Kawase, Kohei; and Tamaru, Kenzi, 3,842,113.
Ichikawa, Masaru; Naito, Shuichi; Kawase, Kohei; and Tamaru, Kenzi, 3,842,121.

SAIA AG. FAbrik elektrischer Apparate: *See—*
Gerber, Hermann, 3,842,296.

Saiha, Erik Viktor, to Oy Tampella AB. Method for the carbonation of sulphide-containing green liquor solutions. 3,841,961, Cl. 162-29.000.

Saito, Kunio; Ishii, Tatsuo; and Seta, Shigetoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Synthetic resin compositions. 3,842,029, Cl. 260-37.00n.

Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, to Sankyo Company Limited. 15-Hydroxyprost-13-enoic acid derivatives. 3,842,116, Cl. 260-468.00d.

Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, to Sankyo Company Limited. 15-Oxoprost-13-enoic acid derivatives. 3,842,117, Cl. 260-468.00d.

Sakaki, Hirokazu, to Fuji Photo Film Co., Ltd. Lithographic printing plates. 3,841,218, Cl. 101-459.000.

Sakakura, Akira; Matsumoto, Fumio; and Ueno, Kiyoshi, to Nippon Steel Corporation. Method for producing a high magnetic flux density grain oriented electrical steel sheet. 3,841,924, Cl. 148-111.000.

Sakuma, Kotaro. Eyecap for a compact camera. 3,842,431, Cl. 354-287.000.

Salamon, Theodore M., to General Motors Corporation. Locking mechanism for a vehicle body restraint belt retractor. 3,841,581, Cl. 242-107.400.

Salter, Andrew: *See—*
Salter, Andrew; and Fried, Robert, 3,841,309.

Salter, Andrew; and Fried, Robert, to Salter, Andrew. Method of analyzing cerebral electrical activity. 3,841,309, Cl. 128-2.10b.

Sanders Associates, Inc.: *See—*
Dunne, Michael P., 3,842,354.

Sandoz Ltd.: *See—*
Thiele, Berthold; and Tscherter, Hans, 3,842,092.

Sandoz-Wander, Inc.: *See—*
Bacso, Imre; and Coombs, Robert V., 3,842,104.
Habeck, Dietmar A.; and Houlihan, William J., 3,842,088.
Manning, Robert E., 3,842,086.

Sands, Robert E. Non-tapping service line connection fitting. 3,841,667, Cl. 285-39.000.

Sankyo Company Limited: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.

Sankyo Kogaku Kogyo Kabushiki Kaisha: *See—*
Katagiri, Toru; Ito, Akio; and Inoue, Toshiyuki, 3,841,735.

Santangelo, Carmine A. Adaptor for spark plug wires to distributor cap. 3,842,387, Cl. 339-26.000.

Santulli, Vincent F.: *See—*
Deluca, Paul V.; Santulli, Vincent F.; Gazzo, John J., Jr.; Manos, George; and Mickowski, John, 3,842,218.

Sarantakis, Dimitrios: *See—*
McKinley, Wayne A.; and Sarantakis, Dimitrios, 3,842,066.

Sarantakis, Dimitrios, to American Home Products Corporation. Synthesis of (Des-Asn^3)-SRIF and intermediates. 3,842,067, Cl. 260-112.500.

Sargent Industries, Inc.: *See—*
Smith, Fred T., 3,841,093.

Sargisson, Donald Farley; and Rundell, Dan Joseph, to General Electric Company. Multi mission tandem propulsion system. 3,841,091, Cl. 60-224.000.

Sasaki, Masaaki: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.

Sasaki, Toshiro; Oka, Michio; and Washio, Yoshiaki, to Toyo Kogyo Co., Ltd. Apparatus for simultaneously electroplating inside surfaces of annularbodies. 3,841,990, Cl. 204-224.00r.

Sastry, Gundu M.: *See—*
Anagnostou, Taki J.; Dixon, Norman B.; and Sastry, Gundu M., 3,842,023.

Sato, Jutaro, to Tanaka, Yutaka and Kimura, Yoskio. Hinge. 3,840,936, Cl. 16-76.000.

Sato, Katsuo; and Imae, Yoshio, to Mitsubishi Gas Chemical Company, Inc. Method of coloring unsaturated polyester resin shaped article. 3,842,032, Cl. 260-40.00r.

Satzler, Ronald L.: *See—*
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,840,979.

Savel, John J.: *See—*
Etchelecou, Robert J. L.; and Savel, John J., 3,841,256.

Saxena, Usha. Ready to wear sari. 3,840,899, Cl. 2-74.000.

Saylor, Randall K.; and Knab, Thomas J., to General Motors Corporation. Viscous fluid clutch. 3,841,451, Cl. 192-58.00b.

Scahfer, Manfred. Injection valve for an internal combustion engine. 3,841,277, Cl. 123-32.00r.

Scalzo, Augustine J., to Westinghouse Electric Corporation. Axial flow turbine sturcture. 3,841,787, Cl. 415-136.000.

Scanner, Inc.: *See—*
Dolch, Volker, 3,842,200.

Scarnato, Thomas J.; Cicci, George B.; and Meyer, Martin H., to International Harvester Company. Windrow placement device and harvesting method. 3,841,070, Cl. 56-14.400.

Schaefer, Edward J., to Franklin Electric Co., Inc. Submersible electric motor. 3,842,298, Cl. 310-87.000.

Schaeff, Friedrich, to Otto Sauer, Achsenfabrik. Spring suspension for motor vehicle axles. 3,841,655, Cl. 280-124.00r.

Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, to Badische Anilin- & Soda-Fabrik Aktien-

gesellschaft. Guide elements for magnetic tapes wound or to be wound in the form of packs on flageless spools. 3,841,582, Cl.242-199.000.

Schalk, Heinz: *See—*
Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,841,262.

Schallert, Heino: *See—*
Friese, Karl-Hermann; Geier, Heinz; Pollner, Rudolf; and Schallert, Heino, 3,841,987.

Scharnhorst, Peter: *See—*
Greene, Richard F.; Schoolar, Richard B.; and Scharnhorst, Peter, 3,842,274.

Schaub, Carlton H.: *See—*
Broadley, William D.; Grina, Kenneth I.; and Schaub, Carlton H., 3,841,586.

Schedele, Helmut; and Bosch, Werner, to Siemens Aktiengesellschaft. Contact spring set for an electromagnetic relay. 3,842,231, Cl. 200-283.000.

Schelich, Ardell J.: *See—*
Hoffman, John E.; and Schelich, Ardell J., 3,841,490.

Schell, Friedrich Peter. Feed assembly. 3,841,370, Cl. 144-144.00s.

Schellhorn, Jurgen: *See—*
Groppenbacher Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,841,262.

Scherbina, Nikolai Yakovlevich: *See—*
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich, 3,841,923.

Scherer, Herbert: *See—*
Koehler, Waldemar; Riedel, Oswald; Scherer, Herbert; and Schlereth, Georg, 3,841,155.

Scherhab, Berng; Koppelmann, Eliahu; Wolz, Hermann; and Francque, Marc, to Bayer Aktiengesellschaft. Production of 2-mercaptobenzimidazole by reacting o-phenylene diamine and carbon disulfide. 3,842,098, Cl. 260-309.200.

Schering Aktiengesellschaft: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,842,105.

Schillreff, George H., to General Dynamics Corporation. Decoy rounds for counter measures system. 3,841,219, Cl. 102-37.600.

Schlanzke, Claus-Georg: *See—*
Gutlbauer, Franz; Meyer, Meinert; and Schlanzke, Claus-Georg, 3,841,180.

Schlanzky, Manfred P. H., to General Motors Corporation. Differential mounted single stage diaphragm operate. 3,841,796, Cl. 417-274.000.

Schlapmann, William J.; and Manteufel, Dale, to Case, J. I., Company. Self-actuating brake. 3,841,447, Cl. 188-77.00r.

Schlereth, Georg: *See—*
Koehler, Waldemar; Riedel, Oswald; Scherer, Herbert; and Schlereth, Georg, 3,841,155.

Schlicke, Heinz M., to Allen-Bradley Company. Feedthrough filter with non-linear resistive dielectric. 3,842,374, Cl. 333-79.000.

Schloemann Aktiengesellschaft: *See—*
Gutlbauer, Franz; Meyer, Meinert; and Schlanzke, Claus-Georg, 3,841,180.

Schlossberg, Howard, to United States of America, Air Force. Technique and apparatus for stabilizing the frequency of a gas laser. 3,842,367, Cl. 331-94.500.

Schlueter, Frederick: *See—*
Coutant, Ralph W.; and Schlueter, Frederick, 3,841,721.

Schlunke, Jurgen, to Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Hagtung. Apparatus for satinizing fibrous webs. 3,841,963, Cl. 162-362.000.

Schluter, Herbert, to Chemische Werke Huls, A.G. Process for the preparation of low-viscosity, low-odorous styrene/butadiene polymer dispersions containing carboxyl groups. 3,842,025, Cl. 260-29.7pt.

Schmid Laboratories, Inc., mesne: *See—*
Carroll, Albert; and Beall, Glen L., 3,841,533.

Schmidt, Hans V. Length measurer for elongate materials. 3,841,462, Cl. 198-39.000.

Schmidt, Robert A.: *See—*
Robinson, Daniel E.; and Schmidt, Robert A., 3,841,810.

Schmidtke, Martin; Reuttenauer, Winfried; and Penzl, Reinhold, to Siemens Aktiengesellschaft. Method of producing micro-electronic circuits. 3,840,986, Cl. 29-625.000.

Schmitt, James L.; and Ohaver, David S., to Caterpillar Tractor Company. Modulating control valve for hydraulically operated winch. 3,841,608, Cl. 254-187.00r.

Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, to VEBA-Chemie Aktiengesellschaft. Polyamides of trimethylhexamethylenediamine cycloaliphatic dicarboxylic acid and carbocyclic aromatic dicarboxylic acid. 3,842,046, Cl. 260-78.00r.

Schneiderhan, Edward M., to Cummins-Allison Corp. Electronic control system for punch-type encoder. 3,842,245, Cl. 235-61.100.

Schnell, Georg: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, 3,841,582.

Schneyer, Herbert D. Composition and method for treatment of pathological calcification in animals. 3,842,169, Cl. 424-232.000.

Schoolar, Richard B.: *See—*
Greene, Richard F.; Schoolar, Richard B.; and Scharnhorst, Peter, 3,842,274.

Schrader, Gert: *See—*
Baum, Heinz; Camp, Eckart Op Den; Schrader, Gert; and Botteril, John Redvers, 3,841,444.

Schredl, Konrad: *See—*
Lucke, Heinz; Schredl, Konrad; and Boy, Peter, 3,841,113.

Schreiber, Helmut: *See—*
Grosse-Holling, Werner; Hapke, Jobst; Hohenhinnebusch, Wilhelm; and Schreiber, Helmut, 3,841,938.

Schrempp, Klaus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the production of easily laked azo pigments. 3,841,889, Cl. 106-289.000.

Schroder, Heinz: *See—*
Mayer, Hans; Schroder, Heinz; and Schucktanz, Gerhard, 3,841,272.

Schubeck, Joseph J., to Scott and Fetzer Company; d/b/a Lakewood Industries, division of Scott and Fetzer Co. Bellhousing block plate. 3,841,290, Cl. 123-195.00a.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Lucke, Heinz; Schredl, Konrad; and Boy, Peter, 3,841,113.

Schucktanz, Gerhard: *See—*
Mayer, Hans; Schroder, Heinz; and Schucktanz, Gerhard, 3,841,272.

Schuffler, Arnulf: *See—*
Jakobi, Wilhelm; Schuffler, Arnulf; and Schurhoff, Heinrich, 3,841,975.

Schultz, Carl D.: *See—*
Simonton, Robert D.; Schultz, Carl D.; and Stiger, Clyde W., 3,841,672.

Schultz, Forrest O. E., to Midland-Ross Corporation. Parking brake control. 3,841,714, Cl. 303-71.000.

Schulz, Johann G. D.: *See—*
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,842,106.

Schulze, Heinz; and Marquis, Edward Thomas, to Jefferson Chemical Company, Inc. Preparation of aminocarboxylic acids from aminoalcohols. 3,842,081, Cl. 260-268.00r.

Schumacher, Berthold W., to Westinghouse Electric Corporation. Method and apparatus for aligning a charged particle beam. 3,842,279, Cl. 250-397.000.

Schurhoff, Heinrich: *See—*
Jakobi, Wilhelm; Schuffler, Arnulf; and Schurhoff, Heinrich, 3,841,975.

Schuster, Donald R.; and Tinsler, Theodore E., to Westinghouse Electric Corporation. Room air conditioner damper door operating arrangement. 3,841,110, Cl. 62-427.000.

Schuster, Marvin A.; and Lytle, Walter J., to Westinghouse Electric Corporation. Contacts for semiconductor devices, particularly integrated circuits, and methods of making the same. 3,840,982, Cl. 29-578.000.

Schwab, Albert J.; and Olson, Altin J. Scraping apparatus for rollers. 3,840,933, Cl. 15-236.000.

Schwartz, Carl. Bowling type game. 3,841,632, Cl. 273-39.000.

Schwartz, Ralph E., to Redeco, Inc., mesne. Apparatus for the preservation of biological substances. 3,841,515, Cl. 220-3.000.

Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,842,128, Cl. 260-593.00r.

Schwarze, Werner: *See—*
Meyer-Simon, Eugen; Schwarze, Werner; Thurn, Friedrich; and Michel, Rudolf, 3,842,111.

Schwarzmann, Matthias: *See—*
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, 3,841,907.

Schwibbe, Valfred: *See—*
Buschmann, Hans; Mehlhart, Erwin; Schwibbe, Valfred; and Pomplun, Emil, 3,841,459.

Schwinn Bicycle Company: *See—*
von Heitlinger, Eugene, 3,840,956.

Scicchitano, Patsy A.; Malarbi, Anthony, Jr.; Britz, Stanley M.; and McCarthy, James R. Wall form. 3,841,046, Cl. 52-650.000.

Science Research Council: *See—*
Allen, William Douglas; and Morris, Michael, 3,842,293.

Scifres, Zach M., III: *See—*
Church, Herman S.; Hagener, James L.; and Scifres, Zach M., III, 3,841,682.

SCM Corporation: *See—*
Bordenca, Carl; and Dorschner, Kenneth P., 3,842,179.

Scott and Fetzer Company; d/b/a Lakewood Industries, division of Scott and Fetzer Co.: *See—*
Schubeck, Joseph J., 3,841,290.

Scott, Carl W.: *See—*
Fitzgerald, Mack A., Jr.; Scott, Carl W.; and Scott, Carl W., Jr., 3,840,935.

Scott, Carl W., Jr.: *See—*
Fitzgerald, Mack A., Jr.; Scott, Carl W.; and Scott, Carl W., Jr., 3,840,935.

Scott, Donald C., deceased (by Jarrett, E. K.; administrator), to Clayton Specialties, Inc. Method and apparatus for cleaning rod conveyors. 3,841,469, Cl. 198-229.000.

Scott, Harold W.; and Eversole, Russell A., to Basic Sciences, Inc. Distilling sea water diffused through a membrane. 3,841,976, Cl. 202-236.000.

Scott, Irvin C., Jr.; and Swenck, George F., to Reynolds Metals Company. Ball bat system. 3,841,130, Cl. 72-70.000.
Scott Paper Company: *See—*
Hoffman, Louis S.; and Spruyt, Harry, 3,841,466.
Scripps, E. W. Company, The: *See—*
Miehaus, William R., 3,841,205.
Scripto, Inc.: *See—*
Lockwood, John C., 3,841,517.
Vaughan, Harry L., 3,841,365.
Vaughan, Harry L., 3,841,366.
Sealol, Inc.: *See—*
Kirker, Alton Everett, Jr., 3,841,642.
Searle, G. D., & Co.: *See—*
Sprenger, William K., 3,842,120.
Tweit, Robert C., 3,842,097.
Seelandt, Karl H.: *See—*
Wentworth, Hobart L.; and Seelandt, Karl H., 3,841,240.
Seely, George A.: *See—*
Miller, Clarence S., Jr.; and Seely, George A., 3,841,465.
Sei, Swan T., to Shell Oil Company. Isomerization catalyst activation process. 3,842,114, Cl. 252-455.00z.
Seidel, Hans-Georg: *See—*
Becker, Kurt; and Seidel, Hans-Georg, 3,841,859.
Seifert, Lester H. Forage wagon. 3,841,692, Cl. 296-26.000.
Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,842,429.
Seip, Hermann, to ITT Industries, Inc. Load-dependent brake force distributor. 3,841,713, Cl. 303-22.00r.
Seitel, Heinz, to Telesco Brophey Limited. Telescopic umbrella. 3,841,343, Cl. 135-25.00r.
Selas Corporation: *See—*
Montgomery, William S., Jr.; Marceau, William E.; and Bates, William G., 3,841,855.
Selgin, Paul J., to Neotec Corporation. Method and apparatus for detecting faults in fabric. 3,841,761, Cl. 356-200.000.
Sellors, Thomas J., to Potlatch Corporation. Portable grill stand. 3,841,298, Cl. 126-9.00a.
Senoo, Keiji: *See—*
Kagawa, Hiroshi; and Senoo, Keiji, 3,841,912.
Serratto, Angelo. Local conditioning induction-type apparatus employing primary inlet air as a power means for controlling temperature. 3,841,398, Cl. 165-123.000.
Serta, Inc.: *See—*
Simon, Leroy J., 3,840,915.
Servici, Cesar Juan: *See—*
Bisbee, Charles; Story, Albert Girard; and Servici, Cesar Juan, 3,841,275.
Seta, Shigetoshi: *See—*
Saito, Kunio; Ishii, Tatsuo; and Seta, Shigetoshi, 3,842,029.
Seyfried, Richard F., to Park-Ohio Industries, Inc. Industor for inductively heating metal workpieces. 3,842,234, Cl. 219-10.790.
Shaffer, William E.: *See—*
Harris, Joseph E.; and Shaffer, William E., 3,842,323.
Shankwitz, Robert F.; and Garman, Anthony L., to Caterpillar Tractor Co. Tapered hinge pin assembly and removal means. 3,841,771, Cl. 403-163.000.
Shannon, John Martin, to U.S. Philips Corporation. Methods of manufacturing semiconductor devices. 3,841,917, Cl. 148-1.500.
Shapiro, Eugene; and Crane, Jacob, to Olin Corporation. Process for treating copper alloys to improve creep resistance. 3,841,921, Cl. 148-11.50r.
Sharp, Vance R.; and Hollingsworth, Delbert L. Diet management device. 3,841,260, Cl. 116-136.000.
Sharpe, Thomas H. Jet engine method. 3,841,090, Cl. 60-204.000.
Shave, Robert C. Therapeutic pillow. 3,840,918, Cl. 5-338.000.
Shavel, John Jr.: *See—*
Von Strandtmann, Max; Cohen, Marvin P.; and Shavel, John Jr., 3,842,085.
Shaw, Raymond J., to Mekontrol, Inc. Photo relay comprising light-transmitting plate also used as a circuit board. 3,842,258, Cl. 250-209.000.
Shaw, Woodrow G.: *See—*
Miller, Harold L.; and Shaw, Woodrow G., 3,842,384.
Shawver, Bruce M.: *See—*
Henderson, Jerald M.; and Shawver, Bruce M., 3,841,461.
Shell Oil Company: *See—*
Klaren, Cornelis H. J., 3,842,035.
Sei, Swan T., 3,842,114.
Sinnema, Feije H., 3,842,037.
Wandstrat, Theodore A., 3,842,136.
Shellmaker, Inc.: *See—*
Boland, Thomas M.; and White, Frank G., 3,841,710.
Shelton, Joe: *See—*
Hagood, Jerry W.; Shelton, Joe; and Norman, Ralph L., 3,840,955.
Shelton Metrology Laboratory, Inc., mesne: *See—*
Shelton, Russell S., 3,840,993.
Shelton, Russell S., to Shelton Metrology Laboratory, Inc., mesne. Coordinate measuring machine. 3,840,993, Cl. 33-1.00m.
Shepard, Robert R.: *See—*
Godinez, Peter A.; and Shepard, Robert R., 3,842,316.
Shepherd, David: *See—*
Dasek, Jaoslav; Shepherd, David; and Traflnes, Knut Rude, 3,841,967.
Sheridon, Nicholas K., to Xerox Corporation. Cyclic recording system by the use of an elastomer in an electric field. 3,842,406, Cl. 340-173.00r.
Sherk, Thomas A.; and Tummala, Rao R., to International Business Machines Corporation. Bi_2O_3 containing PbO-ZnO-B_2O_3 low temperature sealing glass. 3,841,883, Cl. 106-53.000.
Shevin, Jack R. Means for attaching a key tag to key ring or chain. 3,841,121, Cl. 70-456.00r.
Shibukawa, Takashi; Hoten, Masanobu; Hayasaki, Naoki; and Mizutani, Shigeo, to Japan Exlan Company, Limited. Blending neutral dyeing 1;2 premetallized azo dyed acid modified acrylic fiber with the same fiber undyed and disperse or cationic dyeing athe blen. 3,841,830, Cl. 8-21.00a.
Shida, Junji, to LegEtronics Inc. Versatile replenishment system for automatic film processors. 3,841,351, Cl. 137-572.000.
Shida, Shigeru; and Tsumura, Sukebumi, to Hitachi, Ltd. Width controlling apparatus and method for rolled strips. 3,841,124, Cl. 72-17.000.
Shiina, Akito: *See—*
Minami, Toshihiro; and Shiina, Akito, 3,841,126.
Shimoda, Noboru; and Koba, Sadaaki, to Fuji Photo Film Co., Ltd. Cassette for X-ray photography. 3,842,282, Cl. 250-468.000.
Shinmeiwa Kogyo Kabushiki Kaisha: *See—*
Nakamura, Takezo; and Iwasaki, Yukio, 3,841,239.
Shionogi & Co., Ltd.: *See—*
Saeki, Haruji, 3,841,029.
Shods, Inc.: *See—*
Bucalo, Louis, 3,841,408.
Shoupp, William E.; and Bratkowski, Walter V. Photographic camera having an integral mechanically-powered electric generator. 3,842,427, Cl. 354-135.000.
Showa Denko Kabushiki Kaisha: *See—*
Hasegawa, Takashi; and Oikawa, Takashi, 3,841,919.
Siano, Vincent: *See—*
Piazza, Nicholas F.; and Siano, Vincent, 3,841,637.
Sidlauskas, David P.: *See—*
Kohler, Robert D.; Sidlauskas, David P.; and Walton, Charles A., 3,842,246.
Siebers, Gerardus Henricus Maria: *See—*
Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, 3,842,304.
Siedenstrang, Roy W., to Phillips Petroleum Company. Treating mill and calender rolls in rubber compounding. 3,841,899, Cl. 117-94.000.
Siegal, Burton L., to Tiffany Industries, Inc. Panel locking devices. 3,841,042, Cl. 52-239.000.
Siegel, Israel. Differential temperature fluid motor. 3,841,097, Cl. 60-517.000.
Siegel, Norman H. Aerosol spray device with cam activator. 3,841,525, Cl. 222-70.000.
Sielaff, Ulrich, to Airco, Inc. Anesthetic vaporizer. 3,841,560, Cl. 239-136.000.
Siemens Aktiengesellschaft: *See—*
Fink, Hermann, 3,841,227.
Heitmann, Hans-Gunter; Donath, Gerhard; and Beyer, Werner, 3,841,486.
Hoffman, Manfred, 3,842,339.
Keller, Wolfgang, 3,841,845.
Maringer, Albert, 3,842,291.
Mayer, Hans; Schroder, Heinz; and Schucktanz, Gerhard, 3,841,272.
Mertens, Willi, 3,841,959.
Schedele, Helmut; and Bosch, Werner, 3,842,231.
Schmidtke, Martin; Reuttenauer, Winfried; and Penzl, Reinhold, 3,840,986.
Sifniades, Stylianos: *See—*
Fuhrmann, Robert; Koff, Fred W.; and Sifniades, Stylianos, 3,842,073.
SIG Schweizerische Industrie-Gesellschaft: *See—*
Engeler, Paul, 3,841,057.
Sigg, Conrad. Apparatus for burning waste matter. 3,841,242, Cl. 110-8.00r.
Sigl, Dieter: *See—*
Hejj, Erwin; Sigl, Dieter; and Soddemann, Hans, 3,841,224.
Signode Corporation: *See—*
Gabriel, William L., 3,841,473.
Sill, Arthur D., to Richardson-Merrell Inc. Benzanthracene derivatives. 3,842,100, Cl. 260-364.000.
Silva, Manuel F. Lobster trap. 3,841,016, Cl. 43-100.000.
Silverman, Robert A.: *See—*
Burness, Donald M.; and Silverman, Robert A., 3,841,872.
Simmonds, Leonard B.; and Ruffing, Charles R., to Westinghouse Electric Corporation. Stator coil bracing. 3,842,303, Cl. 310-260.000.
Simon, Leroy J., to Serta, Inc. Foundation spring unit. 3,840,915, Cl. 5-261.000.
Simon, Warner H. Reel closure. 3,841,000, Cl. 34-242.000.
Simonton, Robert D.; Schultz, Carl D.; and Stiger, Clyde W., to Dale Products, Inc. Tube coupling for smooth walled tubes. 3,841,672, Cl. 285-175.000.

Sinclair, Frederick William, to Gloucester Railway Carriage & Wagon Company. Dampened railway car truck axles. 3,841,233, Cl. 105-224.00r.

Sinden, Frank W. Slidable block puzzle. 3,841,638, Cl. 273-153.00s.

Sindle, Thomas. Ultrasonic distance detection for vehicles. 3,842,397, Cl. 340-1.00r.

Singer Company, The: *See—*
Adams, Kenneth D.; and Greulic, Robert G., 3,841,248.
Casner, John W.; Transue, James A.; and Skiba, John, 3,841,246.
Harf, Kenneth Gert, 3,842,310.

Singh, Harkrishan: *See—*
Peel, Richard E.; and Singh, Harkrishan, 3,841,659.

Singh, Harkrishan, to Ford Motor Company. Seat belt system. 3,841,658, Cl. 280-150.0sb.

Sinnema, Feije H., to Shell Oil Company. Process for preparing higher molecular weight polyepoxide products by condensing lower molecular weight polyepoxide with polyhydric phenols. 3,842,037, Cl. 260-47.0ep.

Sioux Steam Cleaner Corporation: *See—*
Finger, John F.; and Pochop, Merle E., 3,841,273.

Sitte, Hellmuth, to C. Reichert Optische Werke AG. Apparatus for an infinite change of the vertical movement of the specimen in microtomes and ultramicrotomes. 3,841,190, Cl. 83-703.000.

Sitton, Ellis A.: *See—*
Comer, Glen S., Jr.; and Sitton, Ellis A., 3,841,715.

Skiba, John: *See—*
Casner, John W.; Transue, James A.; and Skiba, John, 3,841,246.

Skil Corporation: *See—*
Supel, Ignacy; and Braun, Hermann E., 3,842,328.

Skinner, James L.: *See—*
Wunderlich, Donald K.; and Skinner, James L., 3,841,993.
Wunderlich, Donald K.; and Skinner, James L., 3,841,994.

Skurkiss, Peter Kenny: *See—*
Mac Arthur, Donald Morley; and Skurkiss, Peter Kenny, 3,841,931.

Slack, Don S., to Airco, Inc. Gas mixing systems. 3,841,344, Cl. 137-88.000.

Slessor, John M., to Ford Motor Company. Method of making an elastomeric energy absorber. 3,840,975, Cl. 29-436.000.

Sljusarev, Jury Evgenievich; Reznik, Boris Grigorievich; and Galperin, Jury Aronovich. Device for turning the stator vanes or turbomachines. 3,841,788, Cl. 415-147.000.

Sluetz, Edward J.: *See—*
Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., 3,841,201.

Smalling, Claude W., Jr.: *See—*
Libers, Roland; and Smalling, Claude W., Jr., 3,842,137.

Smith, Andrew W., Jr.: *See—*
Fox, Richard Q.; and Smith, Andrew W., Jr., 3,841,123.

Smith, Carl A.: *See—*
Kinsella, Howard R.; and Smith, Carl A., 3,841,552.

Smith, Chrisman O.: *See—*
Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., 3,840,954.

Smith, Edward Payson; and Nadherny, Rudolph E., to Illinois Railway Equipment Company. Pedestal retaining keys for journal boxes. 3,841,229, Cl. 105-221.00k.

Smith, Fred T., to Sargent Industries, Inc. Noise reduction apparatus and method. 3,841,093, Cl. 60-327.000.

Smith, Geoffrey; and Marley, Thomas. Process for the preparation of leuco crystal violet lactone. 3,842,103, Cl. 260-391.000.

Smith, George Rogers. Self-contained variable fluid bearing for skidding heavy loads. 3,841,719, Cl. 308-5.000.

Smith, James S., Jr.; and Williams, James W., to General Electric Company. Ternary code error detector for a time-division multiplex, pulse-code modulation system. 3,842,401, Cl. 340-146.1ab.

Smith, Malcolm K. Perimeter guard rail system. 3,841,609, Cl. 256-59.000.

Smith, Roger Victor Frederick, to Lucas Electrical Company Limited, The. Slip ring assemblies for rotary electric machines. 3,842,301, Cl. 310-232.000.

Smith, William E.: *See—*
Florence, Jack M.; and Smith, William E., 3,841,927.

Smith, William M., to Redy-Tow, Inc. Tow trailer for vehicles. 3,841,506, Cl. 214-86.00a.

Smith, William Michael, Jr.: *See—*
Garnache, Richard Raymond; and Smith, William Michael, Jr., 3,841,926.

Smithkline Corporation: *See—*
Brenner, Martin; and Loev, Bernard, 3,842,173.
Sutton, Blaine M.; and Weinstock, Joseph, 3,842,107.
Sutton, Blaine M.; and Weinstock, Joseph, 3,842,108.

Snam Progetti, S.p.A.: *See—*
Gordini, Silvano; and Now, Sergio, 3,842,052.

Snell, Leonard Stanley; and Vivian, William Edward Dennis, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the, mesne. Intrascope. 3,841,764, Cl. 356-241.000.

Snidar, Edward A., to Gulf & Western Manufacturing Company. Joint construction. 3,841,772, Cl. 403-224.000.

Snitzer, Elias: *See—*
Gee, Alan E.; and Snitzer, Elias, 3,842,271.

Snow Brand Milk Products Co., Ltd.: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Slide projector magazine positioning means. 3,841,749, Cl. 353-117.000.

Societa' Italiana Resine S.I.R., S.p.A.: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Nistri, Ugo, 3,842,039.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Dasek, Jaoslav; Shepherd, David; and Traflnes, Knut Rude, 3,841,967.

Societe De L' "Aerotrain" Puteaux: *See—*
Bertin, Jean Henri, 3,841,223.

Societe Industrielle de Stratifies: *See—*
Peille, Jean Marie Raymond, 3,841,811.

Societe Miniere et Metallurgique de Penarroya: *See—*
Rey, Maurice; and Formanek, Victor, 3,841,864.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Buisson, Marc Francois Bernard; Foure, Claude Desire; Lacroix, Armand Jean-Baptiste; Quillevere, Herve Alain; and Rousseau, Gilbert James, 3,841,565.

Societe Suisse pour l'Industrie Horlogere Management Services SA: *See—*
Vuilleumier, Cyril, 3,841,084.

Soddemann, Hans: *See—*
Hejj, Erwin; Sigl, Dieter; and Soddemann, Hans, 3,841,224.

Sokolowski, Peter F., to Westinghouse Electric Corporation. Flow restrictor for an evaporator. 3,841,270, Cl. 122-7.00r.

Sola Basic Industries, Inc.: *See—*
Wentworth, Hobart L.; and Seelandt, Karl H., 3,841,240.

Soliman, Mustafa: *See—*
Huttenbrauck, Herbert; Poklekowski, Helmut; and Soliman, Mustafa, 3,841,706.

Solitech, Inc.: *See—*
Gregory, Robert O., 3,842,243.

Soloman, Nathan L. Hair clasp device. 3,841,340, Cl. 132-48.00a.

Solomons, Alexander, to Grafton Furniture Manufacturers Limited. Anchors for springs for furniture. 3,841,618, Cl. 267-110.000.

Solvey & Cie: *See—*
Dassesse, Pierre; and Delwiche, Marius, 3,841,381.

Somekh, George S., to Union Carbide Corporation. Working fluids for external combustion engines. 3,841,099, Cl. 60-671.000.

Somekh, Sasson R.: *See—*
Yariv, Ammon; and Somekh, Sasson R., 3,842,289.

Sone, Toshia: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Sone, Toshimaro: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Sonnet, Philip E.: *See—*
Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,842,128.

Soong, William E.: *See—*
Cosgrove, James F.; and Soong, William E., 3,841,182.

Sosalla, Harry, to Royal Industries, Inc. Multiple-piece wing sections for cultivator and selectively locking means for same. 3,841,412, Cl. 172-311.000.

Soudijn, Willem; van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica N.V. Novel triazas piro(4,5)decan-4-one derivatives. 3,842,076, Cl. 260-240.00r.

South Seas International (NZ) Limited: *See—*
Toulson, Ronald Garnett; and Nix, Ronald George, 3,841,040.

Southco, Inc.: *See—*
Bisbing, Robert H.; and Vickers, James H., 3,841,674.

Southgate, Peter David, to RCA Corporation. Contact array and method of making the same. 3,842,189, Cl. 174-52.00s.

Southgate, Peter David, to RCA Corporation. Thermal radiation detector. 3,842,276, Cl. 250-336.000.

Sparapany, John J.: *See—*
Fetscher, Charles A.; and Sparapany, John J., 3,842,141.

Spasuik, Paul. Bale loader. 3,841,504, Cl. 214-78.000.

Spears, Esten W., Jr.: *See—*
Corrigan, Leo A.; and Spears, Esten W., Jr., 3,841,789.

Special Sports Products Corporation: *See—*
Reedy, Donald G., 3,841,167.

Spelio, Peter N. Applicator for pneumatic therapy. 3,841,322, Cl. 128-40.000.

Spence, David B.: *See—*
Angstadt, John W.; Enberg, Kenneth R.; Kleindinst, Edgar L.; Ring, Richard J.; and Spence, David B., 3,841,826.

Spencer, Phillip B.: *See—*
Drutchas, Gilbert H.; Spencer, Phillip B.; and Hovanchak, John A., 3,841,804.

Spengler, Ernst Maximilian; and Stursberg, Rolf Karl. Cutting die and process. 3,841,189, Cl. 83-660.000.

Sperry Rand Corporation: *See—*
Anderson, Bruce M., 3,842,250.

Spinosa, Dom; and Varga, John M., to East/West Medical Products, Inc., mesne. Medical cassette pump. 3,841,799, Cl. 417-477.000.

Spitz, Erich: *See—*
Broussaud, Georges; and Spitz, Erich, 3,842,197.

Spofford, Walter R., Jr., to Analog Devices, Incorporated. High resolution monolithic digital-to-analog converter. 3,842,412, Cl. 340-347.0da.

Sporlan Valve Company: *See—*
Hoffman, John E.; and Schelich, Ardell J., 3,841,490.

Spraymould (Bahamas) Limited: *See—*
Dicks, Peter D. J.; and Hill, William M., 3,841,935.

Sprenger, William K., to Searle, G. D., & Co. 2-Methyl-2-[p-(N-phenylformimidoyl)phenoxy] propionic acid esters and congeners. 3,842,120, Cl. 260-471.00r.

Sprengling, Gerhard R., to Westinghouse Electric Corporation. Filled composition and article containing perfluorinated surfactant. 3,841,957, Cl. 161-186.000.

Spruyt, Harry: *See—*
Hoffman, Louis S.; and Spruyt, Harry, 3,841,466.

Spyrou, Andrew George: *See—*
Dragonas, Gerasimos Nicolaou; and Spyrou, Andrew George, 3,841,254.

Square D Company: *See—*
Davies, Terrence Ardern, 3,841,869.
Leonard, James H., 3,842,322.

Srinivasan, Rangaswamy, to International Business Machines Corporation. Photochemical iodine laser. 3,842,364, Cl. 331-94.50g.

Staley, A. E., Manufacturing Company: *See—*
Moser, Kenneth B.; and Verbanac, Frank, 3,842,005.

Stammen, Harold A., to Crown Controls Corporation. Vehicle with retractable guard. 3,841,698, Cl. 296-107.000.

Stanciu, Virgil V., to Tempcraft Tool & Mold, Inc. Wax injection nozzle with relief reservoir. 3,841,813, Cl. 425-159.000.

Standard Oil Company: *See—*
Bertolacini, Ralph J.; Hopkins, Paul Donald; and Menzl, Roland L., 3,841,995.
Heffern, Edward W.; Petrille, Dennis G.; and Karll, Robert E., 3,842,095.

Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Apparatus for cleaning the ascension pipes of coke ovens. 3,841,977, Cl. 202-241.000.

Stanley Aviation Corporation: *See—*
Valentine, Gordon A., 3,841,590.

Stanley Electric Co., Ltd.: *See—*
Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, 3,842,240.

Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment apparatus. 3,840,950, Cl. 28-113.000.

Stanley Works, The: *See—*
Suska, Charles R., 3,842,386.

Stark, Sven Olof Soren; and Olsen, Jan-Erik, to Tetra Pak International AB. Outer container for packing units. 3,841,477, Cl. 206-491.000.

Starr, Earl F., Jr.: *See—*
Heitman, James M.; and Starr, Earl F., Jr., 3,842,262.

Staudt, Heinrich: *See—*
Muller, Rolf; and Staudt, Heinrich, 3,841,285.

Staudt, Heinrich; Hofmann, Eberhard; and Djordjevic, Ilija, said Staudt and said Hofmann assors. to Bosch, Robert, G.m.b.H. Elastic rotary coupling for a centrifugal governor of an RPM regulator associated with an internal combustion engine. 3,841,111, Cl.64-27.0nm.

Stauffer Chemical Company: *See—*
Grindstaff, Donald A.; Steinreich, Joseph S.; and Post, Leo B., 3,840,996.
Jin, Jung Il, 3,842,048.

Stedman, Robert N.: *See—*
Webber, Raymond E.; Boggs, Roger L.; and Stedman, Robert N., 3,841,716.

Steelcase Inc.: *See—*
Platner, Warren; Whitwam, Ronald L.; Kolk, Stephen B.; and Ursul, Earl G., 3,841,704.

Steger, John F., to Morton-Norwich Products, Inc. Magnesium oxide steel coating composition and process. 3,841,925, Cl. 148-113.000.

Steigerwald Strahltechnik GMBH: *See—*
Von Walter, Alfred, 3,842,236.

Stein, Charles R.: *See—*
Peroutky, Donald C.; and Stein, Charles R., 3,841,747.

STein, Gunter: *See—*
Ewert, Bruno; and STein, Gunter, 3,841,657.

Stein, Wolfgang J.; and Straniti, Salvatore, to Avco Corporation. Compressor flow fence. 3,841,790, Cl. 415-159.000.

Steinhagen, Carl A.: *See—*
Carlson, Robert G.; and Steinhagen, Carl A., 3,841,942.

Steinmann, Helmut, to Bosch, Robert, GmbH. Temperature control for vehicle passenger space. 3,841,395, Cl. 165-35.000.

Steinreich, Joseph S.: *See—*
Grindstaff, Donald A.; Steinreich, Joseph S.; and Post, Leo B., 3,840,996.

Stelzer, William, to Kelsey-Hayes Company. Dual brake system having bypass valve. 3,841,711, Cl. 303-6.00c.

Stenwall, Lauri A. Stand for holding and protecting flexible trash bags. 3,841,948, Cl. 161-23.000.

Stenzel, Gunter: *See—*
Dalibor, Horst; Gutte, Richard; and Stenzel, Gunter, 3,842,133.

Stewart, Daniel R.: *See—*
Planchock, Jerry L.; Stewart, Daniel R.; and Brock, Thomas W., 3,841,950.

Stewart, David John, to National Research Development Corporation. Photoelectric transducer. 3,842,353, Cl. 324-109.000.

Stiger, Clyde W.: *See—*
Simonton, Robert D.; Schultz, Carl D.; and Stiger, Clyde W., 3,841,672.

Stigler, Joseph T., to Rostgo International Corporation, mesne. Container filling machine. 3,841,363, Cl. 141-142.000.

Stocker, Herman Walter, to Burroughs Corporation. Velocity control system for reel-to-reel web drive. 3,842,326, Cl. 318-7.000.

Stoeberl, Helmut. Boat hull. 3,840,926, Cl. 9-6.000.

Stolhand, James E.: *See—*
Gregory, M. Duane; Stolhand, James E.; and Yost, Marvin E., 3,842,270.

Stone Conveyor, Inc.: *See—*
Stone, Guthrie B.; Orloff, Arthur; and Wicksall, Guy J., 3,841,463.

Stone, Guthrie B.; Orloff, Arthur; and Wicksall, Guy J., to Stone Conveyor, Inc. Stacker conveyor with flexible section. 3,841,463, Cl. 198-109.000.

Stone, Richard W. Cable lock. 3,841,118, Cl. 70-33.000.

Story, Albert Girard: *See—*
Bisbee, Charles; Story, Albert Girard; and Servici, Cesar Juan, 3,841,275.

Storz, Karl. Method and apparatus for bathing body cavities. 3,841,330, Cl. 128-230.000.

Stoughton, Dan T. Massage apparatus. 3,841,323, Cl. 128-40.000.

Stoup, Philip T.: *See—*
Russell, Allen S.; Jarrett, Noel; and Stoup, Philip T., 3,842,163.

Stoy Artur: *See—*
Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, 3,842,151.

Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, to Ceskoslovenska akademie ved. Method for preparing fibers from polymer solutions. 3,842,151, Cl. 264-203.000.

Strang, Charles D., to Outboard Marine Corporation. High performance stern drive. 3,841,257, Cl. 115-35.000.

Straniti, Salvatore: *See—*
Stein, Wolfgang J.; and Straniti, Salvatore, 3,841,790.

Strauff, Gunther, to Langen & Co. Stabilization means for motor vehicles. 3,841,653, Cl. 280-124.00f.

Strayer, James W.: *See—*
Walton, Roger H.; and Strayer, James W., 3,841,510.

Stredwick, Jonathan B.: *See—*
Key, Brian D.; Kingdom Hockings, Michael L.; Lovelace, Michael N. G.; Rankin, Howard C.; and Stredwick, Jonathan B., 3,842,405.

Stressed Pipe Research, Inc.: *See—*
James, Kenneth E., 3,841,356.

Stromberg, Per Sigmund. Crate. 3,841,519, Cl. 220-83.000.

Stromberg-Carlson Corporation: *See—*
Altenburger, Otto; and Dorazio, Alton, Jr., 3,842,214.
Harris, Joseph E.; and Shaffer, William E., 3,842,323.
Russell, Stanley L.; Gueldenpfenning, Klaus; and Pommerening, Uwe A., 3,842,215.

Stubiger, Ernst: *See—*
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,840,946.

Stupp, Hermann-Josef: *See—*
Overhoff, Theodor; and Stupp, Hermann-Josef, 3,841,757.

Sturlason, Leif Viggo; and Ohrberg, Carl Verner, to Danfoss A/S. Gerotor type motor with pressure biased rotary valve. 3,841,801, Cl. 418-61.00b.

Stursberg, Rolf Karl: *See—*
Spengler, Ernst Maximilian; and Stursberg, Rolf Karl, 3,841,189.

Styan, Garrick E.: *See—*
Procter, Alan R.; Styan, Garrick E.; and Vinje, Magnus G., 3,841,962.

Subsea Equipment Associates Limited (SEAL): *See—*
Capot, Lucien, 3,841,665.

Suga, Noboyoshi: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.

Sugiura, Masaki: *See—*
Chibata, Ichiro; Kosumi, Masahiko; Komatsubara, Saburo; and Sugiura, Masaki, 3,841,968.

Sullivan, William H., to Vecta Group, Inc., The. Connectable lounge chairs. 3,841,701, Cl. 297-248.000.

Sulzer Brothers Ltd.: *See—*
Florjancic, Dusan, 3,841,786.

Sumitomo Chemical Company, Limited: *See—*
Horiuchi, Fukashi; Higo, Akio; and Yoshioka, Hirosuke, 3,842,125.
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, 3,842,131.

Sun Chemical Corporation: *See—*
Himics, Richard J., 3,842,051.
Whelan, Edward J., 3,840,999.

Sun Oil Company (Delaware): *See—*
Bennett, John D.; and Chaney, Preston E., 3,841,252.

Sun Research and Development Co.: *See—*
Mitchell, Richard E., 3,841,844.

Sunbeam Plastic Corporation: *See—*
Montgomery, ary B.; and Gach, Peter P., 3,841,514.
Sundberg, Hardy Mikael. Compost toilet. 3,840,907, Cl. 4-133.000.
Supel, Ignacy; and Braun, Hermann E., to Skil Corporation. Speed control device with independent speed control and on-off operating members. 3,842,328, Cl. 318-249.000.
Surmacz, Theodore J.: *See—*
Pleiss, Bernard J., Jr.; and Surmacz, Theodore J., 3,842,297.
Susan Shoe Industries, Limited: *See—*
Huyge, John, 3,841,003.
Suschuk-Sljusarenko, Igor Ivanovich: *See—*
Dudko, Daniil Andreevich; Scherbina, Nikolai Yakovlevich; Suschuk-Sljusarenko, Igor Ivanovich; Chvertko, Antoly Ivanovich; Khrundzhe, Viktor Mikhailovich; and Bizik, Nikolai Konstantinovich, 3,841,923.
Suska, Charles R., to Stanley Works, The. Hinge for passing electrical current. 3,842,386, Cl. 339-4.000.
Suter, Walter, to Oehler-Wyhlen-Lagertechnik AG. Palletized cargo discharge apparatus for conveyors. 3,841,460, Cl. 198-20.00r.
Sutton, Blaine M.; and Weinstock, Joseph, to Smithkline Corporation. Phosphine or phosphite gold complexes of thiobenzoic acid and substituted thiophenols. 3,842,107, Cl. 260-430.000.
Sutton, Blaine M.; and Weinstock, Joseph, to Smithkline Corporation. Large ring gold-sulfur-phosphine chelates. 3,842,108, Cl. 260-430.000.
Sutton, Make T.: *See—*
Hilker, George D.; Doehrman, Charles E.; Lausen, Verne H.; Mowery, Harold P.; and Sutton, Make T., 3,842,192.
Suzuki, Seiji: *See—*
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, 3,842,131.
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, to Teikoku Hormone Mfg. Co., Ltd. Naphtho(2,1-d) isoxazole derivatives. 3,842,099, Cl. 260-307.00d.
Svaty, Vladimir; and Taticek, Lubomir, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Apparatus for forming leno selvedge. 3,841,358, Cl. 139-54.000.
Svenska Dataregister AB: *See—*
Englund, Gosta Roland; Lundell, Bjorn Sture; and Lindelow, Claes-Goran, 3,841,341.
Swanson, Kermit E., to Donelley, R. R., & Sons Company. Apparatus for disposing thin sheet material in a shingled stream. 3,841,622, Cl. 271-13.000.
Sweco, Inc.: *See—*
Barrows, John B.; and Hansen, Leslie T., 3,841,482.
Swenck, George F.: *See—*
Scott, Irvin C., Jr.; and Swenck, George F., 3,841,130.
Swenson, Henning C., Jr.: *See—*
Mallery, Lawrence E.; Arken, Theodore; and Swenson, Henning C., Jr., 3,841,154.
Swidler, Ronald; and Wilson, Katherine W., to Cotton, Incorporated. Process for treating cellulosic material with formaldehyde in liquid phase and sulfur dioxide. 3,841,832, Cl. 8-116.400.
Swiss Aluminium Ltd., mesne: *See—*
Adams, Clarence Maurice, 3,841,768.
Syntex (U.S.A.) Inc., mesne: *See—*
Bennett, John P.; and Bliss, George D., 3,841,999.
Syria, Ronald L., to Borg-Warner Corporation. Analyzer for control system which regulates vehicle braking. 3,841,712, Cl. 303-21.0af.
Szatkowski, Richard R., to Continental Can Company, Inc. Container and container blank. 3,841,479, Cl. 206-524.000.
Sziburies, Werner: *See—*
Heidrich, Klaus; Kietz, Lothar; and Sziburies, Werner, 3,841,498.
Szmuszkovicz, Jacob, to Upjohn Company, The. 7-Phenylpyrimido[1,2-a] [1,4]. 3,842,080, Cl. 260-256.40f.
Tabira, Tsutomu: *See—*
Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, 3,841,966.
T.A.D. Avanti, Inc.: *See—*
Foresta, Francis A.; and Bonsky, Elmer C., 3,842,209.
Foresta, Francis A.; and Bonsky, Elmer C., 3,842,213.
Tadanier, John Soloman: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,842,069.
Tadinier, John Soloman; and Martin, Jerry Roy, to Abbott Laboratories and 8-Epi-erythromycins. . 3,842,068, Cl. 260-210.00e.
Takagi, Toshiaki: *See—*
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Takahashi, Tsunehiko; and Nabara, Akira, to Fuji Photo Film Co., Ltd. Multi-color recording method and apparatus therefor. 3,842,195, Cl. 358-75.000.
Takahashi, Yasuo; and Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle objective lens system with large back focus. 3,841,736, Cl. 350-214.000.
Takahashi, Yoshiyuki: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.
Takami, Masaho. Package binding machine. 3,841,055, Cl. 53-198.00r.
Takashima, Shunichi: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Kawashima, Masao, 3,842,043.
Takemoto, Iwao; Miwa, Ichiro; and Tokuyama, Takashi. Production of semiconductor photoelectric conversion target. 3,841,928, Cl. 148-190.000.
Takemoto, Takeo; Tomita, Yoshifumi; Ijichi, Ichiro; and Maeda, Sajiro, to Hitachi, Ltd. Method for making a phosphor screen of a cathode ray tube. 3,841,876, Cl. 96-36.100.
Taksahi, Masanori; and Yoshiyasu, Mitsuo, to Mitsubishi Petrochemical Company Limited. Apparatus for making synthetic paper. 3,841,943, Cl. 156-494.000.
Tamaru, Kenzi: *See—*
Ichikawa, Masaru; Naito, Shuichi; Kondo, Toshihiko; Kawase, Kohei; and Tamaru, Kenzi, 3,842,113.
Ichikawa, Masaru; Naito, Shuichi; Kawase, Kohei; and Tamaru, Kenzi, 3,842,121.
Tanabe Suaku Co., Ltd.: *See—*
Chibata, Ichiro; Kosumi, Masahiko; Komatsubara, Saburo; and Sugiura, Masaki, 3,841,968.
Tanaka, Mitsuaki: *See—*
Kaneda, Tadayoshi; and Tanaka, Mitsuaki, 3,841,550.
Kawaski, Sadao; Kaneda, Tadayoshi; and Tanaka, Mitsuaki, 3,841,457.
Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing blends of vinyl chloride resin composition. 3,842,144, Cl. 260-876.00r.
Tanaka, Yutaka: *See—*
Sato, Jutaro, 3,840,936.
Taneya, Shinichi: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Noboyoshi; Kato, Tojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; Sone, Toshia; Taneya, Shinichi; and Sone, Toshimaro, 3,841,610.
Tanomura, Masahisa: *See—*
Kawaguchi, Takuo; Nishida, Takashi; Ohmura, Yoshiaki; Tanomura, Masahisa; Nakao, Kozo; Takagi, Toshiaki; Ninagawa, Yoichi; and Itoi, Kazuo, 3,842,130.
Tappan Company, The: *See—*
Lamb, John T., 3,842,233.
Perl, Richard L., 3,842,319.
Tarsitano, John J. Pneumatic reciprocating surgical saw and file. 3,841,335, Cl. 128-317.000.
Tarutani, Masaaki: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.
Tate, Thomas E., to Medical Evaluation Devices & Instruments Corp. Distally valved catheter device. 3,841,308, Cl. 128-2.00m.
Taticek, Lubomir: *See—*
Svaty, Vladimir; and Taticek, Lubomir, 3,841,358.
Taupin, Jean-Paul. Valves for controlling the flow of finely-divided material from a hopper. 3,841,535, Cl. 222-502.000.
Tayama, Isamu: *See—*
Kato, Satoru; and Tayama, Isamu, 3,841,067.
Taylor, Alexander R., 20% interest to Lee, Raymond, Organization, Inc., The. Vacuum cleaning unit for vehicles. 3,841,553, Cl. 237-12.30r.
Taylor, Glenn R.; and Kellogg, Walter J., to Westinghouse Electric Corporation. Remote press to test indicating light circuit. 3,842,343, Cl. 324-21.000.
Taylor, Harry E. Foldable bed guard rail. 3,840,917, Cl. 5-331.000.
Taylor, Howard D.: *See—*
Berg, Rudolph; Bantel, Otto; and Taylor, Howard D., 3,840,937.
Taylor, Robert B.: *See—*
Grant, Peter M.; Taylor, Robert B.; and Jackson, Winston J., Jr., 3,842,021.
Tazuke, Hideo: *See—*
Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, 3,841,966.
Teaney, P. La Rue: *See—*
Howarth, David E.; Teaney, P. La Rue; and Glowach, Edward R., 3,841,265.
Technar Incorporated: *See—*
Bell, Lon E., 3,842,382.
Technical Ordnance, Inc.: *See—*
Hoffman, Norman H., 3,840,988.
Tecna Corporation: *See—*
Kitrilakis, Sotiris; and Robinson, Thomas C., 3,841,837.
Tecnica Sener, Industrialy y Naval, S.A.: *See—*
Urruela, Jose Rivacoba, 3,841,269.
Teikoku Hormone Mfg. Co., Ltd.: *See—*
Suzuki, Yasushi; Itaya, Toshihisa; Minami, Nobuyoshi; Tarutani, Masaaki; Miki, Tokutaro; and Miyasaka, Katsuhiko, 3,842,099.
Teledyne Mid-America Corporation: *See—*
Church, Herman S.; Hagener, James L.; and Scifres, Zach M., III, 3,841,682.
Telefonaktiebolaget L M Ericsson: *See—*
Arras, Juho, 3,842,220.
Telephone Corporation of America: *See—*
Dawson, Charles E., 3,842,210.
Telesco Brophey Limited: *See—*
Seitel, Heinz, 3,841,343.
Tempcraft Tool & Mold, Inc.: *See—*
Stanciu, Virgil V., 3,841,813.
Templeman, John Joseph, to British Gas Corporation. Method for the purification of natural gas. 3,841,058, Cl. 55-33.000.

Tempmaster Corporation: *See—*
Van Becelaere, Robert M., 3,841,394.
Tenneco Inc.: *See—*
Hetherington, Theofore W., 3,841,435.
Terajima, Yasuhiko; Okada, Ryuzo; and Horie, Kiyoshi, to Fuji Xerox Co., Ltd. Light source for copying machine. 3,841,752, Cl. 355-4.000.
Terbrack, William H., to Gardner-Denver Company. Rate measurement circuit. 3,842,347, Cl. 324-78.00d.
Tesk, John A.: *See—*
Dudek, Ronald P.; Kosmos, Peter; and Tesk, John A., 3,841,868.
Tessier, Keith Campbell: *See—*
Aaron, Colin; Edwards, Alan Harold; and Tessier, Keith Campbell, 3,841,850.
Tessler, Martin M., to National Starch and Chemical Corporation. Method for the preparation of starch phosphate esters. 3,842,071, Cl. 260-233.500.
Tetra Pak International AB: *See—*
Stark, Sven Olof Soren; and Olsen, Jan-Erik, 3,841,477.
Tetro, Richard S.: *See—*
Phelps, Richard W.; and Tetro, Richard S., 3,841,577.
Texaco Inc.: *See—*
Arnold, Dan M.; and Pitts, Robert W., Jr., 3,842,264.
Burnett, David B.; and Alston, Robert B., 3,841,403.
Burnett, David B., 3,841,406.
Pitts, Robert W., Jr., 3,842,265.
Williams, Dale; and Bunn, Dorrance P., Jr., 3,841,843.
Texas Instruments Incorporated: *See—*
Boulanger, Henry J., 3,842,229.
Texcell Corporation: *See—*
Martin, Hubert, 3,841,387.
Textured Yarn Co., Inc.: *See—*
Stanley, Robert K., 3,840,950.
Thanawala, Hemesh Laxmidas: *See—*
Friedlander, Eirch Siegfried; and Thanawala, Hemesh Laxmidas, 3,842,342.
Thatcher, Kenneth Cyril, to Fibreglass Limited. Treatment of glass fibres. 3,841,184, Cl. 83-346.000.
Thermo-Flex, Inc.: *See—*
Morrison, Richard L.; and Webb, Venard C., 3,840,922.
Morrison, Richard L.; and Webb, Benard C., 3,841,922.
Thettu, Taghulinga R., to Xerox Corporation. Toner release oil transfer pad. 3,841,827, Cl. 432-60.000.
Thevenaz, Jean A., to Bolex International SA. Cinematographic projector. 3,841,743, Cl. 352-198.000.
Thiele, Berthold; and Tscherter, Hans, to Sandoz Ltd. Sesquicillin. 3,842,092, Cl. 260-343.500.
Thiokol Chemical Corporation: *See—*
Villa, Jose L.; and Iserson, Hyman, 3,842,053.
Thodos, George, to Thomas, James E. Lawn edging device. 3,841,022, Cl. 47-33.000.
Thomas & Betts Corporation: *See—*
Netta, Louis A., 3,840,987.
Thomas, Frank: *See—*
Thomas, Thomas A., Jr.; and Thomas, Frank, 3,841,014.
Thomas, James E.: *See—*
Thodos, George, 3,841,022.
Thomas, Morton I. Combination chair and table. 3,841,699, Cl. 297-174.000.
Thomas, Robert W., to United States of America, Air Force. Atmospheric sampling probe for a mass spectrometer. 3,842,266, Cl. 250-288.000.
Thomas, Thomas A., Jr.; and Thomas, Frank. Fishsaving device. 3,841,014, Cl. 43-43.160.
Thomason, Walter A., Jr. Web control apparatus. 3,840,942, Cl. 19-150.000.
Thompson, James K.; and Harrell, Melvin R., to Phillips Petroleum Company. Method and apparatus for automatically capping carton with lids. 3,841,054, Cl. 53-38.000.
Thompson, James M.; Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Durable fire retardant fabrics made using organic solvent systems of brominated phosphate monomers. 3,841,902, Cl. 117-136.000.
Thompson, Jeffrey L.: *See—*
Cross, Newbold O.; and Thompson, Jeffrey L., 3,841,146.
Thompson, John T.: *See—*
Anderson, Karl R., 3,842,219.
Thompson, John W.: *See—*
Briddell, Charles D.; and Thompson, John W., 3,840,940.
Thompson, Michael Ainley; and Phillips, Brian Leslie, to Joseph Lucas (Industries) Limited. Vehicle traction systems. 3,841,238, Cl. 180-65.000.
Thomson-CSF: *See—*
Broussaud, Georges; and Spitz, Erich, 3,842,197.
Thurn, Friedrich: *See—*
Meyer-Simon, Eugen; Schwarze, Werner; Thurn, Friedrich; and Michel, Rudolf, 3,842,111.
Thurston, Raymond L., to Microdot Inc. Lock nut. 3,841,371, Cl. 151-21.00r.
Tiffany Industries, Inc.: *See—*
Siegal, Burton L., 3,841,042.
Time Computer, Inc., mesne: *See—*
Bergey, John M., 3,841,083.
Timelapse, Inc.: *See—*
Lewis, Robert E., 3,841,763.
Timeline Inc.: *See—*
Farrington, Robert C., 3,841,564.
Tine, Sebastian David; and Dewberry, Albert W., to Watts Regulator Company. Injection lubricator. 3,841,438, Cl. 184-7.00d.
Tingquist, Stanley C.; and Laux, Edward G., to Howmet Corporation. Method and apparatus for melting and casing metal. 3,841,384, Cl. 164-60.000.
Tinnerman, George August. Quick-acting clamp. 3,841,196, Cl. 85-36.000.
Tinsler, Theodore E.: *See—*
Schuster, Donald R.; and Tinsler, Theodore E., 3,841,110.
Tison, Kenneth F., to Marine Construction & Design Co. Long-line setting, baiting and hauling system and apparatus. 3,841,011, Cl. 43-4.000.
Todd, Theodore J. Trickle rate fluid outlet. 3,841,349, Cl. 137-513.500.
Tokumaru, Tooru: *See—*
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, 3,842,131.
Tokuyama, Takashi: *See—*
Takemoto, Iwao; Miwa, Ichiro; and Tokuyama, Takashi, 3,841,928.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Ito, Akira, 3,841,193.
Tolliver, Wilbur E., to New York Wire Mills Corp. Fabric and method for forming pipe reinforcement. 3,841,591, Cl. 245-1.000.
Tomatu, Toshiharu; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Crystalline poly-alpha-olefine composition having improved dyeability. 3,842,147, Cl. 260-897.00b.
Tome, Larry D., to Lippmann, Inc. Hydraulically folding material discharge conveyor. 3,841,464, Cl. 198-115.000.
Tomita, Rioe. Portable outdoor grill and fire starter unit. 3,841,299, Cl. 126-25.00b.
Tomita, Yoshifumi: *See—*
Takemoto, Takeo; Tomita, Yoshifumi; Ijichi, Ichiro; and Maeda, Sajiro, 3,841,876.
Tompkins, James F.: *See—*
Erby, William A.; and Tompkins, James F., 3,842,126.
Toray Industries, Inc.: *See—*
Okazaki, Kaoru; Higuchi, Aira; and Imaeda, Noaki, 3,841,897.
Torigoe, Masataka; Nakano, Kazuaki; and Aruga, Shiro, to Chisso Corporation. Method for producing polyvinyl chloride. 3,842,056, Cl. 260-92.80w.
Toro, Anthony S. Safety bumper. 3,841,683, Cl. 293-86.000.
Torosian, Ashod; and Giacoletti, John B., to General Motors Corporation. Catalytic converter muffler assembly. 3,841,841, Cl. 23-288.00f.
Toti, Andrew J. Apparatus for forming a structural unit. 3,840,960, Cl. 29-200.00b.
Toulson, Ronald Garnett; and Nix, Ronald George, to South Seas International (NZ) Limited. Building structures. 3,841,040, Cl. 52-92.000.
Towell, Leroy Dean, to Computer Industries, Inc. Wire routing system. 3,842,190, Cl. 174-68.500.
Towner, George H.: *See—*
Powers, Joseph William, Jr.; and Towner, George H., 3,842,251.
Townsend, Franklin L., to Barber-Colman Company. Double thread detector. 3,840,951, Cl. 28-43.000.
Toyo Kogyo Co., Ltd.: *See—*
Sasaki, Toshiro; Oka, Michio; and Washio, Yoshiaki, 3,841,990.
Toyo Seikan Kaisha, Ltd.: *See—*
Yamanashi, Norio, 3,840,939.
Toyoda Koki Kabushiki Kaisha: *See—*
Ota, Hiroshi, 3,841,296.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Kazumasa, 3,842,287.
Traeger, Frank J., Jr.: *See—*
Arnold, Alison M.; Hapke, Donald W.; and Traeger, Frank J., Jr., 3,841,588.
Traflnes, Knut Rude: *See—*
Dasek, Jaoslav; Shepherd, David; and Traflnes, Knut Rude, 3,841,967.
Trans Container Corporation: *See—*
Vollers, Gary L., 3,842,149.
Transglas Patent- und Lizenzverwertungs AG: *See—*
Harcuba, Siegfried, 3,841,857.
Transidyne General Corporation: *See—*
VandenBroek, Jan A.; and Wilfong, William L., 3,842,422.
Transue, James A.: *See—*
Casner, John W.; Transue, James A.; and Skiba, John, 3,841,246.
Treacle, Dennis L. Enterostomy drainage appliance. 3,841,332, Cl. 128-283.000.
Trippensee Corporation: *See—*
Duperon, Terry L., 3,841,162.
Tronzo, Raymond G. Acetabular cup prosthesis. 3,840,904, Cl. 3-1.000.
Troutner, Arthur L.; Russell, John R.; Johnson, Alan W.; and Johnson, Clifford R., to Trus Joist Corporation. Apparatus for assembling glue-coated wood veneer sheets into a continuous linearly extending stack. 3,841,945, Cl. 256-538.000.
Trus Joist Corporation: *See—*
Troutner, Arthur L.; Russell, John R.; Johnson, Alan W.; and Johnson, Clifford R., 3,841,945.
TRW Inc.: *See—*

Drutchas, Gilbert H.; Spencer, Phillip B.; and Hovanchak, John A., 3,841,804.
Tscherter, Hans: *See—*
Thiele, Berthold; and Tscherter, Hans, 3,842,092.
Tschorn, Reginald R.: *See—*
Lambert, Jack L.; and Tschorn, Reginald R., 3,841,765.
Tsuchiya, Eigo: *See—*
Asai, Soichiro; Ishii, Shoichi; Tabira, Tsutomu; Tsuchiya, Eigo; and Tazuke, Hideo, 3,841,966.
Tsumura, Sukebumi: *See—*
Shida, Shigeru; and Tsumura, Sukebumi, 3,841,124.
Tsunekawa, Tokuichi; Nakamoto, Soichi; and Hasegawa, Goro, to Canon Kabushiki Kaisha. Exposure control device in single-lens reflex camera. 3,842,424, Cl. 354-31.000.
Tsutsui, Toshihiro: *See—*
Izumi, Tadayoshi; Hirokawa, Hideo; and Tsutsui, Toshihiro, 3,840,994.
Tucker, Alfred J., to Chicago Rawhide Manufacturing Company. Seal for rubber molds. 3,841,809, Cl. 425-110.000.
Tucker, Council A., to American Telecommunications Corporation. Jack or plug receptacle. 3,842,395, Cl. 339-91.00r.
Tufts, Wesley M.; and Albertassi, James H., to Nautron Corporation. Marine toilet with dispenser. 3,840,914, Cl. 4-224.000.
Tummala, Rao R.: *See—*
Sherk, Thomas A.; and Tummala, Rao R., 3,841,883.
Turner, C. Warren, to Black Clawson Company, The. Wire cage cutter. 3,841,360, Cl. 140-1.000.
Turner, Philip L., to Ford Motor Company. Vehicle headlamp aiming system and method. 3,841,759, Cl. 356-121.000.
Turton, Cecil Nigel: *See—*
Dixon, David Rodney; Turton, Cecil Nigel; and Williams, Ian Gabriel, 3,842,026.
Tweit, Robert C., to Searle, G. D., & Co. 2-(Phenoxyalkylthio) imidazoles and congeners. 3,842,097, Cl. 260-309.000.
Twillman, Dieter: *See—*
Wachendorf, Friedrich; Winkler, Alois; Twillman, Dieter; and Neubert, Rolf, 3,841,074.
Twin Disc, Incorporated: *See—*
Black, James B., 3,841,949.
Tye, John M. Planting implement, J-strap. 3,841,243, Cl. 111-85.000.
Tye, John M. Planting implement, drag. 3,841,244, Cl. 111-85.000.
Tye, John M. Planting implement, pretilling. 3,841,245, Cl. 111-85.000.
Tykachinsky, Isai Davidovich: *See—*
Bondarev, Konstantin Timofeevich; Tykachinsky, Isai Davidovich; Pavlushkin, Nikolai Mikhaiovich; Kataeva, Galina Vasilievna; Kozlovsky, Vikto Stepanovich; Romanovsky, Mark Bentsionovich; Pyatnitskaya, Varvara Vasilievna; and Rud, Svetlana Ivanovna, 3,841,86.
Ueda, Teiji: *See—*
Atsuta, Hisayoshi; Ueda, Teiji; and Koezuka, Yokichi, 3,841,142.
Ueno, Kiyoshi: *See—*
Sakakura, Akira; Matsumoto, Fumio; and Ueno, Kiyoshi, 3,841,924.
Uhl, Karl: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, 3,841,582.
Uhlir, Pavel; and Uhlirova, Jarmila, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Apparatus for holding and removing a knitwork in a double cylinder circular knitting machine. 3,841,112, Cl. 66-14.000.
Uhlirova, Jarmila: *See—*
Uhlir, Pavel; and Uhlirova, Jarmila, 3,841,112.
Ujiie, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for manufacturing curved wall metallic objects. 3,841,383, Cl. 164-52.000.
Ujiie, Akira, to Mitsubishi Jikogyo Kabushiki Kaisha. Welding method employing inclined parallel groove. 3,842,237, Cl. 219-135.000.
Ultra Products, Inc.: *See—*
Brown, William M., 3,841,595.
Ultrasonic Systems, Inc.: *See—*
Balamuth, Lewis; Rutten, Michael R.; and Meyer, Robert, 3,840,932.
UNELEC: *See—*
Granson, Jean; and Hennemann, Jean, 3,842,380.
Union Carbide Corporation: *See—*
Acomb, Byron Hillen, 3,841,353.
Chow, Sui-Wu; and Matzner, Markus, 3,842,036.
Harpold, Michael A.; and Atkins, Kenneth E., 3,842,142.
Omietanski, George M.; and Chuang, Vincent T., 3,842,112.
Richardson, Stanley Hamilton, 3,842,027.
Somekh, George S., 3,841,099.
Union Oil Company of California: *See—*
Hansford, Rowland C., 3,842,158.
Young, Dean Arthur, 3,842,016.
Uniroyal: *See—*
Leblond, Jean; Danneels, Guy; and Lambert, Maurice, 3,841,941.
Uniroyal, Inc.: *See—*
Ariyan, Zaven S.; and Harrison, William A., 3,842,172.
Gilreath, Arnold A., 3,841,373.
Uniroyal Ltd.: *See—*
Ariyan, Zaven S.; and Harrison, William A., 3,842,172.
Unitec, Inc.: *See—*
Mayer, Ronn H., 3,842,409.
United Aircraft Corporation: *See—*
Bergmann, Richard J., 3,841,794.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Field-Richards, Hugh Sherwood, 3,842,351.
Snell, Leonard Stanley; and Vivian, William Edward Dennis, 3,841,764.
United States of America
: *See—*
Arndt, Walter R., 3,842,419.
Walton, Roger H.; and Strayer, James W., 3,841,510.
Young, Don L. Jr., 3,841,171.
Agriculture: *See—*
Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,842,128.
Air Force: *See—*
Berta, Michael A.; and Jones, Claude R., 3,842,284.
Cote, Walter E., 3,842,352.
Dobrzelecki, Arthur J.; and Buggeln, Richard C., 3,842,363.
Heitman, James M.; and Starr, Earl F., Jr., 3,842,262.
Morrisey, Edward J., 3,841,197.
Schlossberg, Howard, 3,842,367.
Thomas, Robert W., 3,842,266.
Young, Don L., Jr., 3,841,773.
Army: *See—*
Evers-Euterneck, Ernst T., 3,841,585.
Atomic Energy Commission: *See—*
Caldwell, Carroll E.; and Ficklin, Ann C., 3,841,863.
Health, Education and Welfare: *See—*
Goldstein, Seth R., 3,841,310.
National Aeronautics and Space Administration: *See—*
Wilkins, Judd R.; and Mills, Stacey M., 3,841,973.
Navy: *See—*
Becker, Edward B., 3,841,148.
Clark, Arthur C., 3,841,107.
Green, James H., 3,842,228.
Greene, Richard F.; Schoolar, Richard B.; and Scharnhorst, Peter, 3,842,274.
Kermode, David W., 3,841,734.
United States Scientific Instruments, Inc.: *See—*
Goldberg, Jacob, 3,842,341.
United States Steel Corporation: *See—*
Bode, Charles H., Jr., 3,841,538.
Leonard, Ralph W., 3,841,894.
Universal Oil Products Company: *See—*
Barnes, Marion W., 3,841,274.
Lowe, Frederick G., 3,841,703.
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,841,136.
University of California, The Regents of the: *See—*
Perez-Mendez, Victor, 3,842,373.
Upjohn Company, The: *See—*
Gall, Martin; and Hester, Jackson B., Jr., 3,842,090.
Hester, Jackson B., Jr.; and Gall, Martin, 3,842,089.
Killinger, Fred M., 3,841,329.
Lincoln, Frank H., Jr., 3,842,118.
Szmuszkovicz, Jacob, 3,842,080.
Urbanova, Renata: *See—*
Stoy, Vladimir; Stoy Artur; Kucera, Josef; Prokop, Jaroslav; and Urbanova, Renata, 3,842,151.
Urruela, Jose Rivacoba, to Tecnica Sener, Industrialy y Naval, S.A. Bearers for solid of revolution tanks on board ships. 3,841,269, Cl. 114-74.00r.
Ursul, Earl G.: *See—*
Platner, Warren; Whitwam, Ronald L.; Kolk, Stephen B.; and Ursul, Earl G., 3,841,704.
U.S. Philips Corporation: *See—*
Beyer, Louis Benjamin; Cornelissen, Gerardus Antonius Petrus Maria; Driessen, Antonius Jozephus Gerardus Cornelis; Jacobs, Cornelis Adrianus Joannes; and Siebers, Gerardus Henricus Maria, 3,842,304.
Brandquist, Rune Lennart, 3,842,340.
Hoppenbrouwers, Johannes Josephus Marie, 3,842,012.
Korteling, Aart Gerrit, 3,841,288.
Shannon, John Martin, 3,841,917.
Van Daelen, Henri Jean Gerard; Hendriks, Adrianus Anthonius Maria; and Koteris, Willem Johannes Jozef, 3,842,313.
Van Esdonk, Johannes; and Jacobs, Jacobus Hubertus, 3,842,308.
Van Stratum, Antonius Johannes Alberta; Verest, Franciscus Johannes; and Parchen, Wilheim Ernst Paul, 3,842,309.
Wesseling, Karel Hendrik; and De Wit, Benjamino, 3,841,313.
USM Corporation: *See—*
Garner, Derek H.; Bosworth, George H.; and Barker, Roger M., 3,840,929.
Utah State University Foundation: *See—*
Gandhi, Niranjan R.; and Richardson, Gary H., 3,841,834.
Vagi, Kitty: *See—*
Podesva, Ctirad; and Vagi, Kitty, 3,842,094.
Valentine, Gordon A., to Stanley Aviation Corporation. Head restraint apparatus. 3,841,590, Cl. 244-138.00r.
Valmat Signs & Signals Ltd.: *See—*
Ludwig, Vernon A., 3,841,010.
Vamosi, Jozsef: *See—*

Giflo, Henrik; Enekes, Sandor; Zambo, Pal; and Vamosi, Jozsef, 3,841,866.
Van Becelaere, Robert M., to Tempmaster Corporation. Minimum air volume control device. 3,841,394, Cl. 165-30.000.
Van Buren, Myers, to Bayshore Concrete Products Corp. Anchor plate means for reinforcing rods. 3,841,599, Cl. 249-205.000.
Van Buskirk, Warren T., to Xerox Corporation. Corona generator cleaning apparatus. 3,842,273, Cl. 250-324.000.
Van Daelen, Henri Jean Gerard; Hendriks, Adrianus Anthonius Maria; and Koteris, Willem Johannes Jozef, to U.S. Philips Corporation. Multiple character gas discharge display device. 3,842,313, Cl. 315-169.0tv.
Van De Putte, Tonny: *See*—
Dijkstra, Fokke Cornelius; Groothuizen, Theodorus Maria; Pasman, Hermanus Johannes; and Van De Putte, Tonny, 3,842,181.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Cultivator and tines. 3,841,411, Cl. 172-111.000.
van der Lely, Cornelis. Implements for the displacement of crop lying on the ground. 3,841,073, Cl. 56-370.000.
Van Esdonk, Johannes; and Jacobs, Jacobus Hubertus, to U.S. Philips Corporation. Gas discharge panel with apertured center plate having an oxidized surface. 3,842,308, Cl. 313-188.000.
Van Grecken, Gene, to Gvang Motor Company Pty. Limited. Energy conversion device. 3,841,802, Cl. 418-66.000.
van Heijst, Willem Jan, to N.V. Industrieele Handelscombinatie Holland. Piping between a buoy and a stationary conduit. 3,841,357, Cl. 138-120.000.
Van Heijst, Willem Jan, to N.V. Industrieele Handelscombinatie Holland. Ship loading and unloading equipment. 3,841,501, Cl. 214-13.000.
Van Stratum, Antonius Johannes Alberta; Verest, Franciscus Johannes; and Parchen, Wilheim Ernst Paul, to U.S. Philips Corporation. Method of manufacturing a storage cathode and cathode manufactured by said method. 3,842,309, Cl. 313-346.0dc.
van Wijngaarden, Ineke: *See*—
Soudijn, Willem; van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, 3,842,076.
Van Zyl, Josias, to Intermenua (Proprietary) Limited. Shearing machine. 3,841,183, Cl. 83-157.000.
Vandale, Leonard A.: *See*—
Appleby, Paul E.; Braden, William D.; and Vandale, Leonard A., 3,841,033.
Vandaveer, Roscoe F.: *See*—
Moote, Truman P.; and Vandaveer, Roscoe F., 3,841,405.
Vandenabeele, Hubert: *See*—
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Vandenabeele, Hubert, 3,841,878.
Vandenbergh, Atoon Leon: *See*—
Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, 3,841,877.
Vandenberghe, Antoon Leon: *See*—
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; and Vandenabeele, Hubert, 3,841,878.
VandenBroek, Jan A.; and Wilfong, William L., to Transidyne General Corporation. Method and apparatus for recording signals. 3,842,422, Cl. 346-1.000.
Vandermeirsch, Marcel A., to Fabrique National Herstal S.A. en abrege EN. Process and device for doubling on a double needle bed, rib end knitting machine. 3,841,114, Cl. 66-148.000.
Vandrebeck, Roger, to Cebal. Head for crimping metal caps on containers. 3,841,056, Cl. 53-331.000.
Varga, John M.: *See*—
Spinosa, Dom; and Varga, John M., 3,841,799.
Vargiu, Silvio; Giovanni, Sesto S.; Mazzoleni, Giorgio; and Nistri, Ugo, to Societa' Italiana Resine S.I.R., S.p.A. Three stage process for the preparation of resins from urea and formaldehyde. 3,842,039, Cl. 260-69.00r.
Varian Associates: *See*—
Iwao, Kumiry Roy, 3,841,160.
Varner, Donald E., to Industrial Nucleonics Corporation. Control system for a cigarette making machine or the like. 3,841,337, Cl. 131-21.00b.
Vaughan, Harry L., to Scripto, Inc. Unitary resilient sealing valve. 3,841,365, Cl. 141-291.000.
Vaughan, Harry L., to Scripto, Inc. Unitary resilient sealing valve. 3,841,366, Cl. 141-291.000.
VEBA-Chemie Aktiengesellschaft: *See*—
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,842,046.
Vecta Group, Inc., The: *See*—
Sullivan, William H., 3,841,701.
Vedvik, Andrew H.; and Layman, Melvin M., to Mayer, Oscar, & Co., Inc. Packaging forming apparatus. 3,841,820, Cl. 425-388.000.
Vepa AG: *See*—
Fleissner, Heinz, 3,841,933.
Verbanac, Frank: *See*—
Moser, Kenneth B.; and Verbanac, Frank, 3,842,005.
Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung: *See*—
Behnert, Reinhard, 3,841,562.
Verest, Franciscus Johannes: *See*—
Van Stratum, Antonius Johannes Alberta; Verest, Franciscus Johannes; and Parchen, Wilheim Ernst Paul, 3,842,309.
Verfahrenstechnik KG: *See*—
Kohler, Friedrich, 3,842,257.
Vertrieb von Werkzeugen GmbH, Firma: *See*—
Biersack, Horst, 3,841,418.
Vetco Offshore Industries, Inc.: *See*—
Larralde, Edward; and Robinson, Glenn, 3,841,607.
Vetter, Heinz, to Heimsport GmbH. Push pull rotatable wheel type exercising device. 3,841,627, Cl. 272-79.00r.
Vickers, James H.: *See*—
Bisbing, Robert H.; and Vickers, James H., 3,841,674.
Vilagi, Burton J.: *See*—
Drozek, Julius S.; Horvath, Richard A.; and Vilagi, Burton J., 3,841,567.
Vilain, Robert, to Entreprise d'Equipement Mecaniques & Hydrauliques E.M.H. Floating systems of the barge type, especially for drilling in deep water. 3,841,249, Cl. 114-.50d.
Villa, Jose L.; and Iserson, Hyman, to Thiokol Chemical Corporation. Perfluoroalkyl iodide modified polybutadiene resins. 3,842,053, Cl. 260-83.300.
Villette, Guy. Filter device. 3,841,487, Cl. 210-123.000.
Vinje, Magnus G.: *See*—
Procter, Alan R.; Styan, Garrick E.; and Vinje, Magnus G., 3,841,962.
Vinson, Paul. Press with multiple shuttle feed. 3,841,181, Cl. 83-50.000.
Vischer, Alfred, Jr. Eyeglass frame. 3,841,741, Cl. 351-120.000.
Viscolosi, Louis A., Jr.: *See*—
Di Benedetto, Frank; and Viscolosi, Louis A., Jr., 3,841,390.
Vitali, Romano: *See*—
Gardi, Rinaldo; and Vitali, Romano, 3,842,075.
Vivian, William Edward Dennis: *See*—
Snell, Leonard Stanley; and Vivian, William Edward Dennis, 3,841,764.
Vizziello, Vito M.; and Bouteiller, Charles A., to New England Log Homes, Inc. Planing and grooving machine. 3,841,367, Cl. 144-3.00r.
Vlach, Thomas L.: *See*—
Edwin, Allan I.; Vlach, Thomas L.; and Bennett, Melvin T., 3,841,149.
Vockenhuber, Karl: *See*—
von Belvard, Peter Revy, 3,841,742.
Voelker, Walter Daniel. Adjustable mattress for pregnant mothers. 3,840,920, Cl. 5-348.0wb.
Vogt, Wilhelm; Glaser, Hermann; and Dyrschka, Helmut, to Knapsack Aktiengesellschaft. Aluminate supported catalytic composition as an exhaust gas catalyst. 3,842,015, Cl. 252-455.00r.
Vollers, Gary L., to Trans Container Corporation. Method for blow pin actuation in injection blow molding. 3,842,149, Cl. 264-97.000.
von Belvard, Peter Revy, to Vockenhuber, Karl and Hauser, Raimund. Method for preparing a limited film length. 3,841,742, Cl. 352-91.000.
von Heitlinger, Eugene, to Schwinn Bicycle Company. Wheel rim strip assembly. 3,840,956, Cl. 29-33.500.
Von Roeschlaub, Warren N. Hot melt applicator and method. 3,841,527, Cl. 222-146.00h.
Von Strandtmann, Max; Cohen, Marvin P.; and Shavel, John Jr. Substituted pyrano(2,3-b)pyrans and process for their production. 3,842,085, Cl. 260-289.00r.
Von Walter, Alfred, to Steigerwald Strahltechnik GMBH. Process to control the movement of a workpiece with respect to a beam of a stock processing machine operating by means of controllable. 3,842,236, Cl. 219-121.0em.
Vosper Limited: *See*—
Dyke, Raymond William, 3,841,433.
Vuilleumier, Cyril, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Calendar mechanism for time-pieces. 3,841,084, Cl. 58-58.000.
Wachendorf, Friedrich; Winkler, Alois; Twillman, Dieter; and Neubert, Rolf, to Krupp, Fried. Gesellschaft mit beschrankter Haftung. Ring spinning machine and method of operation. 3,841,074, Cl. 57-34.0tt.
Wackie Chemie GmbH: *See*—
Gabriel, Richard; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; and Kaczerofsky, Rupert, 3,842,055.
Wade, Donald H.: *See*—
Padgitt, Kenneth W.; and Wade, Donald H., 3,842,345.
Wager Electric Corporation: *See*—
Atkins, Carl E., 3,842,324.
Wagner Electric Corporation: *See*—
Fleagle, Joseph E., 3,842,355.
Wagner, Robert J., to Allis-Chalmers Corporation. Adjustable tractor seat. 3,841,696, Cl. 296-65.00r.
Wainwright, Clyde S., Jr.: *See*—
Callihan, Rudy B.; and Wainwright, Clyde S., Jr., 3,841,400.
Wakabayashi, Nobel: *See*—
Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,842,128.
Wakeen, Nicholas P., 50% to Blodgett, Norman S. Gas cleaning apparatus. 3,841,066, Cl. 55-290.000.
Wakeman, William R., to Moore Business Forms, Inc. Maniford envelope assembly. 3,841,549, Cl. 229-69.000.
Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Solder removing apparatus. 3,842,240, Cl. 219-230.000.

Walden, John P., to General Electric Company. Extended output power control of inverter. 3,842,338, Cl. 321-43.000.
Walker, Frank H., to General Motors Corporation. Coaxial fluid lines with plug-in connector assemblies. 3,841,671, Cl. 285-133.00r.
Walker, Terence; and Dianetti, Joseph C., to American Optical Corporation. Illuminating system for contact lens ophthalmometer. 3,842,253, Cl. 240-41.00r.
Wallens, William R.: *See*—
Klein, Lawrence N.; and Wallens, William R., 3,841,116.
Wallington, Frederick L.: *See*—
Banyas, John D.; and Wallington, Frederick L., 3,841,687.
Walsh, Richard David; and Baugher, James Edward, to AMF Incorporated. Bowling ball path indicator. 3,841,633, Cl. 273-54.00d.
Walsh, Robert J., to Monsanto Company. Process for polishing thin elements. 3,841,031, Cl. 51-283.000.
Walter, Arthur. Light curtain for accident prevention. 3,841,766, Cl. 356-256.000.
Walter Kidde & Company, Inc.: *See*—
Robinson, Roland L.; Boltz, Chadwick C.; Everson, Evan P.; and Mac Pherson, Douglas E., 3,841,584.
Walters, Richard P.: *See*—
Haller, Albert H.; Larkin, John J.; and Walters, Richard P., 3,841,362.
Walton, Charles A.: *See*—
Kohler, Robert D.; Sidlauskas, David P.; and Walton, Charles A., 3,842,246.
Walton, Roger H.; and Strayer, James W., said Strayer assor. to United States of America. Aircraft cargo winching system. 3,841,510, Cl. 214-516.000.
Wanddell, Robert E. Dockboard. 3,840,930, Cl. 14-71.000.
Wander Ltd.; a/k/a Wander AG: *See*—
Hunziker, Fritz, 3,842,082.
Wandstrat, Theodore A., to Shell Oil Company. Isoamylene extraction. 3,842,136, Cl. 260-677.00a.
Wang, Samuel S. M., to Dow Chemical Company, The. Polymeric acrylic acid-urea complexes and preparation. 3,842,022, Cl. 260-17.4sg.
Wangard, William: *See*—
Kniepkamp, Alberto E.; and Wangard, William, 3,842,184.
Ward, Allen Edens: *See*—
Wilder, Marion Archer; Ward, Charles Spurgeon; and Ward, Allen Edens, 3,841,159.
Ward, Charles Spurgeon: *See*—
Wilder, Marion Archer; Ward, Charles Spurgeon; and Ward, Allen Edens, 3,841,159.
Wardlaw, William G., Sr.: *See*—
Higginbotham, James M.; and Wardlaw, William G., Sr., 3,841,853.
Ware Machine Works, Inc.: *See*—
Pilch, John S., 3,841,172.
Warner-Lambert Company: *See*—
Gardi, Rinaldo; and Vitali, Romano, 3,842,075.
Warner-Lambert Company, mesne: *See*—
O'Driscoll, Kenneth F.; and Isen, Allan A. (said Isen assor. to), 3,841,985.
Warwick Electronics, Inc.: *See*—
Konopka, John G., 3,842,403.
Martin, James C., 3,842,198.
Washio, Yoshiaki: *See*—
Sasaki, Toshiro; Oka, Michio; and Washio, Yoshiaki, 3,841,990.
Watanabe, Hirotaka: *See*—
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,841,352.
Watanabe, Tatsuya: *See*—
Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, 3,841,750.
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, to Sumitomo Chemical Company, Limited. Process for conducting a diels-alder reaction. 3,842,131, Cl. 260-666.0py.
Watson, Charles Andrew: *See*—
Block, Max; and Watson, Charles Andrew, 3,842,167.
Watterback, Paul Gunnar, to Arbman Development AB. Torque-limiting gripping device for a screw means. 3,841,177, Cl. 81-52.40r.
Watts Regulator Company: *See*—
Tine, Sebastian David; and Dewberry, Albert W., 3,841,438.
Weatherchem Corporation: *See*—
Weatherhead, Albert J., III; and Loughley, William A., 3,841,053.
Weatherhead, Albert J., III; and Loughley, William A., to Weatherchem Corporation. Method and apparatus for displaying product. 3,841,053, Cl. 53-23.000.
Weatherhead Company, The: *See*—
Baker, James P., 3,841,095.
Weaver, John B. Marbleizing apparatus. 3,841,807, Cl. 425-104.000.
Webb, Benard C.: *See*—
Morrison, Richard L.; and Webb, Benard C., 3,841,922.
Webb, Venard C.: *See*—
Morrison, Richard L.; and Webb, Venard C., 3,840,922.
Webber, Raymond E.; Boggs, Roger L.; and Stedman, Robert N., to Caterpillar Tractor Company. Lubricated track joint. 3,841,716, Cl. 305-11.000.
Weber-Knapp Company: *See*—
Little, Carl H., 3,841,767.
Weck, Manfred, to Wolf-Gerate GmbH. Electrically driven lawn mower. 3,841,069, Cl. 56-10.500.
Weddendorf, Elmer R., to B/W Metals Company, Inc. Safety door mechanism. 3,841,440, Cl. 186-1.00r.
Wehling, Rolf: *See*—
Kutscher, Gerhard; Droge, Josef; Wehling, Rolf; and Neubert, Rolf, 3,841,075.
Wehner, Albert, to Hein, Lehmann Aktiengesellschaft. Sieving, screening, filtering or washing machine. 3,841,481, Cl. 209-310.000.
Wehr, Kenneth E.: *See*—
Purcell, Robert J.; and Wehr, Kenneth E., 3,841,424.
Weinstock, Joseph: *See*—
Sutton, Blaine M.; and Weinstock, Joseph, 3,842,107.
Sutton, Blaine M.; and Weinstock, Joseph, 3,842,108.
Weis, Frank G., to Ecodyne Corporation. Pressure switch with diaphragm for liquid bearing solids. 3,842,224, Cl. 200-81.90r.
Weisberg, Jack. Public address system with horn speakers arrayed around and facing inward toward a common point. 3,842,203, Cl. 179-1.0at.
Weisgerber, Willi, to Miller Printing Machinery Co. Sheet feeding apparatus. 3,841,626, Cl. 271-268.000.
Wells, Charles A.; O'Neil, Robert A.; and Wilson, Michael C., to Pretty Products, Inc. Merchandise packaging device. 3,841,478, Cl. 206-491.000.
Wells, Richard C. Remote indicator system. 3,842,408, Cl. 340-216.000.
Welter, Leonard M.: *See*—
Coates, Vincent John; Welter, Leonard M.; and Gold, James J., 3,842,272.
Wenker, Heinrich: *See*—
Heckmann, Werner; Jordan, Heinz; and Wenker, Heinrich, 3,841,364.
Wenskus, Herbert: *See*—
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, 3,840,978.
Wentorf, Robert H., Jr., to General Electric Company. Closed-cycle thermochemical production of hydrogen and oxygen. 3,842,164, Cl. 423-579.000.
Wentworth, Hobart L.; and Seelandt, Karl H., to Sola Basic Industries, Inc. Continuous fluid bed wire burn-off apparatus method. 3,841,240, Cl. 110-8.00r.
Wepron Products (Proprietary) Limited: *See*—
Haskins, Ralph Newton, 3,841,526.
Werner, Frank D. Golf ball retrieving club. 3,841,639, Cl. 273-162.00e.
Werther, Karl G. Boring bar. 3,841,785, Cl. 408-197.000.
Wesco Products Company: *See*—
Horwitz, Don A., 3,841,178.
Wesseling, Karel Hendrik; and De Wit, Benjamino, to U.S. Philips Corporation. Stroke volume meter. 3,841,313, Cl. 128-2.05r.
Western Electric Company, Incorporated: *See*—
Haller, Albert H.; Larkin, John J.; and Walters, Richard P., 3,841,362.
Hetrich, Harold Arthur, 3,841,930.
Jayachandra, Yemmanur, 3,842,277.
Westinghouse Electric Corporation: *See*—
Amos, David J., 3,841,792.
Anderson, Paul T.; and Ramsey, James B., 3,842,383.
Batenburg, Abram, 3,842,356.
Booker, Clyde A., Jr., 3,841,443.
Boyko, Eugene S.; Campbell, Joseph; and Wiggins, Roger J., 3,842,238.
Dickens, Lawrence E., 3,842,359.
Dickens, Lawrence E., 3,842,360.
Fox, Richard Q.; and Emberg, Donald J., 3,841,122.
Fox, Richard Q.; and Smith, Andrew W., Jr., 3,841,123.
Franz, James H., Jr., 3,842,334.
Geyer, Manvel A.; Gordon, Frank J.; Lyman, Richard C.; and , 3,842,249.
Hall, Gary M., 3,842,186.
Hall, Walter O., 3,841,228.
Harris, William G., Jr.; and Massaro, Anthony A., Jr., 3,841,271.
Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., 3,840,954.
Hundstad, Richard L.; and Farish, Owen, 3,842,365.
Leeds, Winthrop M., 3,842,225.
Martin, Jack, 3,840,953.
Melamed, Nathan T.; and Phillips, David C., 3,842,369.
Miller, Harold L.; and Shaw, Woodrow G., 3,842,384.
Nitta, Tohei, 3,842,318.
O'Neill, Wilbur J., 3,841,348.
Palazzolo, Salvatore E.; and Hetrick, Richard R., 3,841,956.
Rice, Kenneth T., Jr., 3,841,133.
Scalzo, Augustine J., 3,841,787.
Schumacher, Berthold W., 3,842,279.
Schuster, Donald R.; and Tinsler, Theodore E., 3,841,110.
Schuster, Marvin A.; and Lytle, Walter J., 3,840,982.
Simmonds, Leonard B.; and Ruffing, Charles R., 3,842,303.
Sokolowski, Peter F., 3,841,270.
Sprengling, Gerhard R., 3,841,957.
Taylor, Glenn R.; and Kellogg, Walter J., 3,842,343.
Westvaco Corporation: *See*—
Bills, Alan M., 3,842,119.
Falkehag, Sten I.; and Bailey, Carl W., III, 3,841,887.

Wexler, Joseph S., to North American Philips Corporation. Solid state start and control circuit for A. C. motor. 3,842,327, Cl. 318-221.00e.

Wheeler, Claud R.; and Freebourn, Norbert E., to Broderick & Bascom Rope Company. Wheeled vehicle tie-down device. 3,841,235, Cl. 105-368.00t.

Whelan, Edward J., to Sun Chemical Corporation. Apparatus for radiation-curing of coating on multi-sided object. 3,840,999, Cl. 34-105.000.

Whirlpool Corporation: *See*—
Marcussen, Henry, 3,840,998.

White, Charles S. Low friction sealing ring. 3,841,644, Cl. 277-158.000.

White, Frank G.: *See*—
Boland, Thomas M.; and White, Frank G., 3,841,710.

White Motor Corporation of Canada Limited: *See*—
Maiste, Arved; and Robertson, Melvin F., 3,841,536.

Whitehall Electronics Corporation: *See*—
Callins, Harold T.; and Doster, William H., 3,842,325.

Whittaker, Mack P.: *See*—
Grindstaff, Lloyd I.; and Whittaker, Mack P., 3,842,165.

Whitwam, Ronald L.: *See*—
Platner, Warren; Whitwam, Ronald L.; Kolk, Stephen B.; and Ursul, Earl G., 3,841,704.

Whitworth, Clyde Weydell: *See*—
Luzzi, Louis Anthony; Whitworth, Clyde Weydell; and Jun, Hung Won, 3,842,170.

Whyzmuzis, Paul D.: *See*—
Minkema, William H.; and Whyzmuzis, Paul D., 3,841,833.

Wiater, Joseph R. Bench Saw. 3,841,188, Cl. 83-471.300.

Wicksall, Guy J.: *See*—
Stone, Guthrie B.; Orloff, Arthur; and Wicksall, Guy J., 3,841,463.

Wiechert, Rudolf: *See*—
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,842,105.

Wiggins, Roger J.: *See*—
Boyko, Eugene S.; Campbell, Joseph; and Wiggins, Roger J., 3,842,238.

Wilbanks, Darrel J.: *See*—
Off, Joseph W. A.; Wilbanks, Darrel J.; and Willcox, Waid O., 3,841,247.

Wilder, Arthur G.; and Bridwell, Harold C., to Christensen Diamond Products Company. Abraders, abrasive particles and methods for producing same. 3,841,852, Cl. 51-295.000.

Wilder, Joseph R.; and Kanbar, Maurice S. Suction-pump assembly for drawing body fluids. 3,841,331, Cl. 128-278.000.

Wilder, Marion Archer; Ward, Charles Spurgeon; and Ward, Allen Edens, to Allied Chemical Corporation. Automatic sampler for flowing staple fiber. 3,841,159, Cl. 73-422.00r.

Wiley, Robert F., to Corning Glass Works. Catalytic converter. 3,841,839, Cl. 23-288.00f.

Wiley, Robert F., to Corning Glass Works. Catalytic converter. 3,841,842, Cl. 23-288.00f.

Wilfong, William L.: *See*—
VandenBrock, Jan A.; and Wilfong, William L., 3,842,422.

Wilford, Ernest, to Associated Weavers Limited. Distribution of fluids from pipes. 3,841,566, Cl. 239-568.000.

Wilkes, Glenn Richard: *See*—
Mowrey, Rowland George; and Wilkes, Glenn Richard, 3,841,873.

Wilkins, Judd R.; and Mills, Stacey M., to United States of America, National Aeronautics and Space Administration. Apparatus for microbiological sampling. 3,841,973, Cl. 195-127.000.

Willcox, Waid O.: *See*—
Off, Joseph W. A.; Wilbanks, Darrel J.; and Willcox, Waid O., 3,841,247.

Willems, Josef Frans; Vandenbergh, Atoon Leon; Pollet, Robert Joseph; Maeda, Sajiro; Roosen, Raymond Albert; and Philippaerts, Herman Adelbert, to Agfa-Gevaert N.V. Development of exposed photographic silver halide elements. 3,841,877, Cl. 96-56.000.

Williams, Dale; and Bunn, Dorrance P., Jr., to Texaco Inc. Apparatus for fluidized catalytic cracking of hydrocarbons. 3,841,843, Cl. 23-288.00s.

Williams, Frederick C., to Hughes Aircraft Company. Bistatic radar system. 3,842,417, Cl. 343-5.00r.

Williams, Haydn Windsor Richard; and Rooney, Clarence Stanley, to Merck Sharp & Dohme (I.A.) Corp. 1,8-Naphthyridine compounds. 3,842,087, Cl. 260-295.00n.

Williams, Ian Gabriel: *See*—
Dixon, David Rodney; Turton, Cecil Nigel; and Williams, Ian Gabriel, 3,842,026.

Williams, James W.: *See*—
Smith, James S., Jr.; and Williams, James W., 3,842,401.

Williams, Robert G.; and Coolidge, Richard M., to General Motors Corporation. Extractor roll drive. 3,841,388, Cl. 164-282.000.

Williams, Robert M., to Genova, Inc. Pipe coupling. 3,841,668, Cl. 285-93.000.

Willock, Charles B. Drop bulb pressure-measuring device. 3,841,157, Cl. 73-389.000.

Wilson, Eugene M.: *See*—
Howarth, Richard C.; and Wilson, Eugene M., 3,841,007.

Wilson, Harry W.: *See*—
Fishkin, Edward A.; and Wilson, Harry W., 3,842,162.

Wilson, John C.; and Hamb, Fredrick, to Eastman Kodak Company. Film forming polyurethanes. 3,842,042, Cl. 260-77.5ap.

Wilson, Katherine W.: *See*—
Swidler, Ronald; and Wilson, Katherine W., 3,841,832.

Wilson, Michael C.: *See*—
Wells, Charles A.; O'Neil, Robert A.; and Wilson, Michael C., 3,841,478.

Wilson, Rollin V. Tip for toy arrows. 3,841,635, Cl. 273-106.50a.

Winfrey, Lewis L. Embalmer's instrument. 3,840,948, Cl. 27-21.000.

Wingerter, Franz, to Berthold Fototype G.m.b.H. Reeling device for information carrier film. 3,841,579, Cl. 242-67.400.

Winkler, Alois: *See*—
Wachendorf, Friedrich; Winkler, Alois; Twillman, Dieter; and Neubert, Rolf, 3,841,074.

Winter, Roland A. E., to Ciba-Geigy Corporation. Processable polyimides and polyamide-imides containing polyolefinic insaturated imides. 3,842,143, Cl. 260-857.0pa.

Wirth, Arno H. Electrostatic flocking equipment. 3,842,315, Cl. 317-3.000.

Witfield, Harold B., Jr.; and Bentley, Thomas P., to Du Pont de Nemours, E. I., and Company. Embossed polyester film preparation. 3,842,152, Cl. 264-210.00r.

Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., to Universal Oil Products Company. Method of designing internally ridged heat transfer tube for optimum performance. 3,841,136, Cl. 72-367.000.

Witten, Louis J. Bag holder. 3,841,592, Cl. 248-101.000.

Wolf, Donald Timothy, to Dentsply Research & Development. Dental alloy. 3,841,860, Cl. 75-.50r.

Wolf, Earl G. Emergency needle airway. 3,841,334, Cl. 128-305.000.

Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Cladding glass compositions for light transmitting glass fibers. 3,841,882, Cl. 106-50.000.

Wolf-Gerate GmbH: *See*—
Weck, Manfred, 3,841,069.

Wolfe, Court L., to Gulf Research & Development Company. Combined depth indicator and water sampler. 3,841,156, Cl. 73-291.000.

Wolfe, Merritt W.: *See*—
Paulin, Kenneth H.; and Wolfe, Merritt W., 3,841,376.

Wolk, Ronald H.; and Chervenak, Michael C., to Hydrocarbon Research, Inc. Treating tar sands bitumen. 3,842,122, Cl. 208-48.00q.

Wolz, Hermann: *See*—
Scherhab, Berng; Koppelmann, Eliahu; Wolz, Hermann; and Francque, Marc, 3,842,098.

Wong, Thomas C.: *See*—
Caputi, Arthur, Jr.; and Wong, Thomas C., 3,842,007.

Wood, Henry P. Apparatus for reducing smog producing emission from internal combustion engines. 3,841,283, Cl. 123-119.00r.

Woodie, Richard M.: *See*—
Absher, Larry R.; and Woodie, Richard M., 3,841,063.

Woodward, Ernest F. Stake pocket adapter. 3,841,695, Cl. 296-43.000.

Woodward, Robert Burns: *See*—
Heusler, Karl; and Woodward, Robert Burns, 3,842,072.

Woolf, Cyril; Clifford, Bryce; and Beyleveld, Wilhelmus Maria, to Allied Chemical Corporation. Process for preparing fluoroperhaloazaelefins. 3,842,127, Cl. 260-566.00r.

Wormser Scientific Corporation: *See*—
Falbel, Gerald, 3,841,302.

Wortberg, Werner: *See*—
Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, 3,841,977.

Worthington Corporation: *See*—
Doolin, John H., 3,841,791.

Wrhen, Wilmer C.: *See*—
Anderton, John J.; Dudzic, Max S.; and Wrhen, Wilmer C., 3,841,389.

Wright, Donald R., to Dow Chemical Company, The. Extrusion apparatus. 3,841,812, Cl. 425-149.000.

Wright, Luther M.: *See*—
Rosborough, Robert S., Jr.; and Wright, Luther M., 3,841,934.

Wunderlich, Donald K.; and Skinner, James L., to Atlantic Richfield Company. Retorting of oil shale with special heat carriers. 3,841,993, Cl. 208-11.000.

Wunderlich, Donald K.; and Skinner, James L., to Atlantic Richfield Company. Retorting oil shale with special pellets and supplemental deposition. 3,841,994, Cl. 208-11.000.

Xerox Corporation: *See*—
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and Mc Carroll, Alan F., 3,841,751.
Drexler, Edward E.; and Norder, Paul D., 3,841,754.
Haas, Warner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., 3,842,275.
Howarth, David E.; Teaney, P. La Rue; and Glowach, Edward R., 3,841,265.
Sheridon, Nicholas K., 3,842,406.
Thettu, Taghulinga R., 3,841,827.
Van Buskirk, Warren T., 3,842,273.

Xidex Corporation: *See*—
Nishino, Akio, 3,841,874.

Yamaguchi, Yoshihiro: *See*—
Nishihara, Masao; Fujita, Tatsu; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; and Noguti, Masataka, 3,841,129.

Yamahara, Takeshi: *See*—
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, 3,842,131.

Yamanami, Shoichi: *See*—
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,841,352.
Yamanashi, Norio, to Toyo Seikan Kaisha, Ltd. Method and apparatus for cutting and removing red meat of fish bodies. 3,840,939, Cl. 17-52.000.
Yamauch, Katsuyoshi: *See*—
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.
Yamazaki, Mitsuo: *See*—
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.
Yanagawa, Nobuyuki, to Ricoh Co., Ltd. Card selection for a card retrieval system. 3,841,480, Cl. 209-80.500.
Yanagimoto Seisakusho Co., Ltd.: *See*—
Kishimoto, Kenichi; Miyauchi, Hiroshi; Inagaki, Yasuhiko; and Fujimoto, Joji, 3,841,835.
Yano, Akira: *See*—
Iwakawa, Tsunektyo; and Yano, Akira, 3,842,314.
Yariv, Ammon; and Somekh, Sasson R., to California Institute of Technology. Thin film waveguide with a periodically modulated nonlinear optical coeficient. 3,842,289, Cl. 307-88.300.
Yarnell, Neil K.; and Prince, Leland S. Utilities meter readout system. 3,842,248, Cl. 235-156.000.
Yee, Gim, to Oxy Metal Finishing Corporation. Method to improve the brightness of zinc from an alkaline zincate electrodeposition bath. 3,841,982, Cl. 204-55.00r.
Yessaian, Harry A. Agitating strainer for machine tool coolant systems. 3,841,488, Cl. 210-168.000.
Yokomizo, Yuhji: *See*—
Ichinose, Noboru; and Yokomizo, Yuhji, 3,842,018.
Yonekura, Seizi: *See*—
Joraku, Masami; Yonekura, Seizi; and Kawano, Shigeyoshi, 3,841,605.
Yoon, Kue H. Circuit interrupter using a double-throat nozzle. 3,842,226, Cl. 200-148.00r.
Yorkshire Switchgear and Engineering Co. Limited: *See*—
Caton, George, 3,842,321.
Yoshida, Kenji: *See*—
Kimura, Ryuichi; Fukui, Kiyoshi; Mortimoto, Takuo; Higuchi, Takashi; Yamauch, Katsuyoshi; and Yoshida, Kenji, 3,841,952.
Yoshida, Mitunari: *See*—
Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, 3,842,240.
Yoshihara, Hiroshi: *See*—
Watanabe, Yoshihiro; Suzuki, Seiji; Tokumaru, Tooru; Yoshihara, Hiroshi; and Yamahara, Takeshi, 3,842,131.
Yoshihiro, Imura. Method and apparatus for forming variegating projecting on a length of cloth. 3,840,949, Cl. 28-1.00r.
Yoshii, Hiroshi: *See*—
Fujimori, Makoto; Yoshii, Hiroshi; Kusakabe, Noboru; Matsubara, Muneo; Ito, Masaru; and Baba, Yutaka, 3,842,034.
Yoshioka, Hirosuke: *See*—
Horiuchi, Fukashi; Higo, Akio; and Yoshioka, Hirosuke, 3,842,125.
Yoshiyasu, Mitsuo: *See*—
Taksahi, Masanori; and Yoshiyasu, Mitsuo, 3,841,943.
Yost, Marvin E.: *See*—
Gregory, M. Duane; Stolhand, James E.; and Yost, Marvin E., 3,842,270.
Young David E.; Gould, Douglas E.; Anderson, Lowell Ray; and Fox, Wiliam B., to Allied Chemical Corporation. Novel catalytic process for the preparation of polyhalohypochlorites. 3,842,156, Cl. 423-466.000.
Young, Dean Arthur, to Union Oil Company of California. Thermally activated crystalline aluminosilicates. 3,842,016, Cl. 252-455.00z.
Young, Don L. Jr., to United States of America. Support for flexible control device. 3,841,171, Cl. 74-501.00r.
Young, Don L., Jr., to United States of America, Air Force. Releasable connector subassembly. 3,841,773, Cl. 403-341.000.
Yuasa Battery Company, Limited: *See*—
Kagawa, Hiroshi; and Senoo, Keiji, 3,841,912.
Yunoki, Issei: *See*—
Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, 3,842,240.
Yusa, Haruhiko: *See*—
Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, 3,842,144.
Yusa, Takashi: *See*—
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,116.
Sakai, Kiyoshi; Yusa, Takashi; Sasaki, Masaaki; Amemiya, Shigeo; Yamazaki, Mitsuo; and Kojima, Koichi, 3,842,117.
Zahn, Wolfgang: *See*—
Fergg, Berthold; Zahn, Wolfgang; and Hujer, Friedrich, 3,841,936.
Zalis, Albert A., to Houdaille Industries, Inc. Screw liner. 3,841,805, Cl. 418-178.000.
Zalucki, Kazimierz. Menses collector. 3,841,333, Cl. 128-285.000.
Zambo, Pal: *See*—
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; and Vamosi, Jozsef, 3,841,866.
Zenith Radio Corporation: *See*—
Park, Yong S.; and Pekosh, Raymond J., 3,841,875.
Zeta International Engineering, Inc.: *See*—
Bartley, John E., 3,841,547.
Zimmer, Jean-Claude: *See*—
Grosbois, Jean; Zimmer, Jean-Claude; and Leroy, Maurice, 3,841,980.
Zimmerman, Edwin Henry: *See*—
Dronick, Lester Alexander; and Zimmerman, Edwin Henry, 3,841,495.
Zimmermann, Max: *See*—
Degen, Rolf; and Zimmermann, Max, 3,841,965.
Zimmern, Bernard. Compressors and expansion machines of the worm and pinion type. 3,841,806, Cl. 418-195.000.
Zinn, Daniel L. Wall construction. 3,841,043, Cl. 52-243.000.
Zinn, Daniel L. Studs. 3,841,047, Cl. 52-720.000.
Zinn, Daniel L. Method of making walls. 3,841,051, Cl. 52-747.000.
Zinn, Robert W., to Knox Manufacturing Company. Collapsible projection screen. 3,841,594, Cl. 248-169.000.
Zinnbauer, Frederick W.; and Ferner, Jack C., to Reynolds Metals Company. Apparatus and method for forming an elongated tubular member. 3,841,138, Cl. 72-369.000.
Zinser-Textilmaschinen GmbH: *See*—
Krauss, Paul; and Fetzer, Gustav, 3,841,077.
Zuech, Ernest A.: *See*—
Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., 3,842,033.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF OCTOBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abildgaard, William H., and C. T. Groswith III, to Velo-Bind, Inc. Book formed of plastic strips and studs. Re. 28,202, 10–15–74, Cl. 281—21.

Aktiebolaget Electrolux: *See*—
Hughes, George L. Re. 28,201.

American Cyanamid Co.: *See*—
Deb, Satyendra K., and Shaw. Re. 28,199.

Benckier, John A., G.m.b.H.: *See*—
Schulz, Guenther. Re. 28,203.

Britton, Leon R., F. S. Vojir, and W. W. Wright, to Guardian Electric Mfg. Co. Push button pulse signal generator. Re. 28,205, 10–15–74, Cl. 310—15.

Cash, David R., to James Cash Machine Co. Dual head for a multi-needle sewing machine. Re. 28,204, 10–15–74, Cl. 112—117.

Cash, James, Machine Co.: *See*—
Cash, David R. Re. 28,204.

Clish, Clyde A.: *See*—
Witt, Wilmer E., Sousek, and Clish. Re. 28,200.

Deb, Satyendra K., and R. F. Shaw, to American Cyanamid Co. Electro-optical device having variable optical density. Re. 28,199, 10–15–74, Cl. 350—160.

Dobras, Bruce W., to Monarch Marking Systems, Inc. Coded record and methods of and apparatus for encoding and decoding records. Re. 28,198, 10–15–74, Cl. 235—61.11.

Eguchi, Tamotsu: *See*—
Ohfuji, Yoshio, and Eguchi. Re. 28,197.

Groswith, Charles T., III: *See*—
Abildgaard, William H., and Groswith III. Re. 28,202.

Guardian Electric Mfg. Co.: *See*—
Britton, Leon R., Vojir, and Wright. Re. 28,205.

Hughes, George L., to Aktiebolaget Electrolux. End closure for disposable dust bag. Re. 28,201, 10–15–74, Cl. 55—367.

Kuraray Co., Ltd.: *See*—
Ohfuji, Yoshio, and Eguchi. Re. 28,197.

Monarch Marking Systems, Inc.: *See*—
Dobras, Bruce W. Re. 28,198.

Ohfuji, Yoshio, and T. Eguchi, to Kuraray Co., Ltd. Process for the production of aromatic polybenzimidazoles. Re. 28,197, 10–15–74, Cl. 260—78.4.

Patecell, Theodore C. Flat tire safety roller and warning indicator. Re. 28,196, 10–15–74, Cl. 152—158.

Schulz, Guenther, to John A. Benckier, G.m.b.H. Process of producing citric acid. Re. 28,203, 10–15–74, Cl. 204—180.

Shaw, Robert F.: *See*—
Deb, Satyendra K., and Shaw. Re. 28,199.

Sousek, Eugene A.: *See*—
Witt, Wilmer E., Sousek, and Clish. Re. 28,200.

Velo-Bind, Inc.: *See*—
Abildgaard, William H., and Groswith III. Re. 28,202.

Vojir, Frank S.: *See*—
Britton, Leon R., Vojir, and Wright. Re. 28,205.

Witt, Wilmer E., E. A. Sousek, and C. A. Clish. Sharpeners for cutting reels. Re. 28,200, 10–15–74, Cl. 51—249.

Wright, William W.: *See*—
Britton, Leon R., Vojir, and Wright. Re. 28,205.

LIST OF PLANT PATENTEES

Byrum, Roy L., to Joseph H. Hill Co. Rose plant. 3,639, 10–15–74, Cl. 29.

Funk, Cyril R., Jr.: *See*—
McViegh, Kevin J., and Funk. 3,643.

Hill, Joseph H., Co.: *See*—
Byrum, Roy L. 3,639.

Klehm, Carl G. to Klehm Properties, Inc. Peony plant. 3,641, 10–15–74, Cl. 68.

Klehm, Carl G. to Klehm Properties, Inc. Peony plant. 3,642, 10–15–74, Cl. 68.

Klehm Properties, Inc.: *See*—
Klehm, Carl G. 3,641.
Klehm, Carl G. 3,642.

Kriloff, Michel. Rose plant. 3,640, 10–15–74, Cl. 11.

McKenzie, Donald W., to Stark Bros. Nurseries & Orchard Co. Apple tree. 3,637, 10–15–74, Cl. 34.

McViegh, Kevin J., and C. R. Funk, Jr. Bluegrass plant. 3,643, 10–15–74, Cl. 88.

Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant. 3,638, 10–15–74, Cl. 68.

Mikkelsens, Inc.: *See*—
Mikkelsen, James C. 3,638.

Stark Bros. Nurseries & Orchard Co.: *See*—
McKenzie, Donald W. 3,637.

LIST OF DESIGN PATENTEES

Abuza, Zachary P., and S. W. Morgenstern. Candle mold. 233,254, 10–15–74, Cl. D55—1.

Acme Metal Goods Mfg. Co.: *See*—
Fischer, Kenneth F. 233,204.

Ander-Mel, Inc.: *See*—
Anderson, James F. 233,213.

Anderson, James T., to Ander-Mel, Inc. Combined vacuum inlet and handle therefor. 233,213, 10–15–74, Cl. D8—187.

Arbon, Dennis C., to Walker Crosweller, & Co. Ltd. Combined spout and diverter valve for a shower or the like. 233,234, 10–15–74, Cl. D23—20.

Arbon, Dennis C., to Crosweller, Walker, & Co. Ltd. Faucet. 233,235, 10–15–74, Cl. D23—23.

Arbon, Dennis C., to Crosweller, Walker, & Co. Ltd. Faucet. 233,236, 10–15–74, Cl. D23—23.

Associated Mills, Inc.: *See*—
Grube, Clifford E. 233,263.

Barry, John R.: *See*—
Murray, Patrick J., and Barry. 233,233.

Bassin, Charles S., to The Compactor Corp. Refuse compactor cabinet. 233,210, 10–15–74, Cl. D7—194.

Bengtsson Sigurd W. Spring fastener or similar article. 233,215, 10–15–74, Cl. D8—264.

Bernstein, Bernard. Charm or similar article. 233,248, 10–15–74, Cl. D45—17.

Bierbusse, James H., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,225, 10–15–74, Cl. D12—146.

Blocksom, Dutro, Jr., to The Procter & Gamble Co. Combined bottle and cap therefor. 233,217, 10–15–74, Cl. D9—147.

Brotman, Morley, to Morley Studios. Military plaque or similar article. 233,242, 10–15–74, Cl. D29—23.

Brunette, Fredrick P.: *See*—
Monet, John E., and Brunette. 233,199.

Cachero, Nicolas M., to Criadores Almacenistats Y Distribuidores de Jeres, S.A. Bottle. 233,216, 10–15–74, Cl. D9—111.

Calhoun, Jerry J., Sr. Shirt. 233,186, 10–15–74, Cl. D2—208.

Carl Mfg. Co. Ltd.: *See*—
Mori, Chuzo. 233,231.

Chernak, John A., to Tomlinson Industries, Inc. Platter. 233,202, 10–15–74, Cl. D7—21.

Chrysler United Kingdom Ltd.: *See*—
Reid, John Ed., Cosgrove, and Mathews. 233,238.

Clay, Robert A. Fluid actuated bellows type jack. 233,221, 10–15–74, Cl. D12—55.

Compactor Corp., The: *See*—
Bassin, Charles S. 233,210.

Congoleum Industries, Inc.: *See*—
White, Gerald E. 233,269.

Cornelius Co., The: *See*—
Holcomb, Donald E. 233,271.

Cosgrove, Richard J.: *See*—
Reid, John E., Cosgrove, and Mathews. 233,238.

Criadores Almacenistas y Distribuidores de Jeres, S.: *See*—
Cachero, Nicolas M. 233,216.

Dreier Brothers, Inc.: *See*—
Dreier, Raymond C. 233,212.

Dreier, Raymond C., to Dreier Brothers, Inc. Hand saw construction. 233,212, 10–15–74, Cl. D8—96.

Dunlop Ltd.: *See*—
Popplewell, Frank W. 233,246.

Egan, Brian C. Serving tray for pizza. 233,201, 10–15–74, Cl. D7—21.

Emanuele, Roy. Mobile server for ice cream cabinets. 233,220, 10–15–74, Cl. D12—22.

Emanuele, Roy, to Institutional Maintenance Corp. Mobile hot food server. 233,253, 10–15–74, Cl. D55—1.

Epstein, Saul. Folding adjustable grill. 233,208, 10–15–74, Cl. D7—107.

Fedulov, Alexandr I.: *See*—
Vikhlyaev, Alexandr A., Nositkov, Semenov, and Fedulov. 233,211.
Findlay, James R., and J. C. Lower. Soap dispenser. 233,197, 10–15–74, Cl. D6—95.
Finegan, Jack R., and J. K. Wasenko, to General Motors Corp. Automobile. 233,222, 10–15–74, Cl. D12—91.
Fischer, Kenneth F., to Acme Metal Goods Mfg. Co. Food grater. 233,204, 10–15–74, Cl. D7—47.
Fisher, Morris F., to Jackson Chair Co., Inc. Sofa. 233,192, 10–15–74, Cl. D6—63.
Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 233,193, 10–15–74, Cl. D6—69.
Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 233,194, 10–15–74, Cl. D6—71.
Fraser, Hugh B., and G. S. Roush, to Phillips Petroleum Co. Bakery tray or the like. 233,268, 10–15–74, Cl. D87—1.
Fry, James C., to Rubbermaid Sales Corp. Toilet bowl brush holder. 233,196, 10–15–74, Cl. D6—85.
General Motors Corp.: *See*—
Finegan, Jack R., and Wasenko. 233,222.
Geraci, James L., and D. L. Walchle, to Xomox Corp. Combination myringotomy tube inserter and aspirator. 233,264, 10–15–74, Cl. D83—12.
Grube, Clifford E., to Associated Mills, Inc. Hydrotherapeutic pad. 233,263, 10–15–74, Cl. D83—1.
Hall, Peter J., to Microfilm Recording Co., Ltd. Microfiche viewer. 233,255, 10–15–74, Cl. D61—1.
Hamilton Humidity, Inc.: *See*—
Shaffer, Burton, and Morgan. 233,237.
Hanson, Alden B., and C. A. Hanson, to Hanson Industries, Inc. Ski boot. 233,187, 10–15–74, Cl. D2—276.
Hanson, Alden B., and C. A. Hanson, to Hanson Industries, Inc. Ski boot. 233,188, 10–15–74, Cl. D2—276.
Hanson, Chris A.: *See*—
Hanson, Alden B., and C. A. 233,187.
Hanson, Alden B., and C. A. 233,188.
Hanson Industries, Inc.: *See*—
Hanson, Alden B., and C. A. 233,187.
Hanson, Alden B., and C. A. 233,188.
Hashiba, Takeo. Venetian shutter. 233,230, 10–15–74, Cl. D13—1.
Heinemann Electric Co.: *See*—
Mune, Charles 233,241.
Henricks, Anita A.: *See*—
Wagner, Lawrence R., and Henricks. 233,205.
Herrin, R. Glenn. Toupee comb. 233,266, 10–15–74, Cl. D86—8.
Hershberger, Lloyd R. Mobile home hitch cover. 233,229, 10–15–74, Cl. D12—162.
Hesener, Walter. Educational game board. 233,245, 10–15–74, Cl. D34—5.
Hicks, Marvin L. Combined cross and peace symbol. 233,243, 10–15–74, Cl. D29—23.
Holcomb, Donald E., to The Cornelius Co. Juice dispenser or similar article. 233,271, 10–15–74, Cl. D94—3.
Holtje, Wilfried, to Rollei-Werke Franke & Heidecke. Adjustable-head electronic flash unit. 233,257, 10–15–74, Cl. D61—1.
Hughes, Ernest W. Fish cleaning board. 233,203, 10–15–74, Cl. D7—46.
Humlong, Robert F.: *See*—
Pawsat, Carlton P., and Humlong. 233,223.
Humlong, Robert F., to Wald Mfg. Co., Inc. Reflective bicycle pedal. 233,224, 10–15–74, Cl. D12—125.
Institutional Maintenance Corp.: *See*—
Emanuele, Roy. 233,253.
Interlake, Inc.: *See*—
Petersen, Warren D. 233,198.
Jackson Chair Co., Inc.: *See*—
Fisher, Morris F. 233,192.
Fisher, Morris F. 233,193.
Fisher, Morris F. 233,194.
Kabushiki Kaisha Tabata a/k/a Tabata Co., Ltd.: *See*—
Tabata, Kazuo. 233,247.
Kaufman, Thomas W. Thermos jug. 233,206, 10–15–74, Cl. D7—61.
Ketcham & McDougall, Inc.: *See*—
Macowski, William. 233,261.
King, William D., Jr., to Pan Nova, Inc. Combined sign and fountain. 233,272, 10–15–74, Cl. D96—12.
Klitzner, William S. Luggage identification tag. 233,274, 10–15–74, Cl. D96—13.
Koppe, Rudolf. Handle for hunting knife. 233,232, 10–15–74, Cl. D22—1.
Kramer, Jochen: *See*—
Prochnow, Claus, Steinbock, Kramer, and Schonfeld. 233,259.
Lakos, Eugene A. Cuff link retainer. 233,189, 10–15–74, Cl. D2—405.
Lear Siegler, Inc.: *See*—
Sadler, Harry J., Pareja, and Leschisin. 233,260.
Le Fever, Romie L., to Self Serv Fixture Co., Inc. Shirt display rack. 233,195, 10–15–74, Cl. D6—85.
Leschisin, John: *See*—
Sadler, Harry J., Pareja, and Leschisin. 233,260.
Lower, James C.: *See*—
Findlay, James R., and Lower. 233,197.
Lowrance, Darrell J., to Lowrance Electronics, Inc. Portable fluorescent lantern. 233,250, 10–15–74, Cl. D48—24.
Lowrance, Darrell J., to Lowrance Electronics, Inc. Combination fluorescent and incandescent lantern. 233,251, 10–15–74, Cl. D48—24.
Lowrance Electronics, Inc.: *See*—
Lowrance, Darrell J. 233,250.
Lowrance, Darrell J. 233,251.
Lubalin, Herbert: *See*—
Lubge, Reiner, and Lubalin. 233,249.
Lubge, Reiner, and H. Lubalin. Multiple lamp tree. 233,249, 10–15–74, Cl. D48—20.
Lynn, Elmer C. Packaging container or the like. 233,218, 10–15–74, Cl. D9—219.
Macowski, William, to Ketcham & McDougall, Inc. Desk top memo stand. 233,261, 10–15–74, Cl. D74—1.
Madl, Alfred W., to Oster Corp. Massage lounger. 233,200, 10–15–74, Cl. D6—201.
Manual Arts Furniture Co.: *See*—
Shearin, Hubert S., and Riley. 233,190.
Mathews, Christopher D.: *See*—
Reid, John E., Cosgrove, and Mathews. 233,238.
Matosian, John. Automotive emblem. 233,273, 10–15–74, Cl. D96—12.
Mattila, Walter J.: *See*—
Tersch, James R., and Matilla. 233,262.
McTigue, Thomas M., to Tempus, Inc. Portable beverage dispenser. 233,270, 10–15–74, Cl. D94—3.
Mehring, Monte D., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,228, 10–15–74, Cl. D12—151.
Mettler Instrumente AG: *See*—
Utzinger, Diethelm. 233,252.
Microfilm Recording Co., Ltd.: *See*—
Hall, Peter J. 233,255.
Molzen, Charles F., to Rubbermaid Sales Corp. Laundry basket. 233,207, 10–15–74, Cl. D7—163.
Monet, John E., and F. P. Brunette, to said Brunette assor, to said Monet. Flower rack. 233,199, 10–15–74, Cl. D6—183.
Morgenstern, Stanley W.: *See*—
Abuza, Zachary P., and Morgenstern. 233,254.
Mori, Chuzo, to Carl Mfg. Co. Ltd. Combined memo pad and pen holder. 233,231, 10–15–74, Cl. D19—78.
Morley Studios: *See*—
Brotman, Morley. 233,242.
Mune, Charles, to Heinemann Electric Co. Circuit breaker case. 233,241, 10–15–74, Cl. D26—13.
Murray, Patrick J., and J. R. Barry, to Nayadic Sciences, Inc. Aerobic sewage treatment tank. 233,233, 10–15–74, Cl. D23—2.
Nayadic Sciences, Inc.: *See*—
Murray, Patrick J., and Barry. 233,233.
Nostikov, Georg M.: *See*—
Vikhlyaev, Alexandr A., Nositkov, Semenov, and Fedulov. 233,211.
O'Donnell, Jerry L. Football blocking sled for forearm testing. 233,219, 10–15–74, Cl. D10—83.
Oster Corp.: *See*—
Madl, Alfred W. 233,200.
Pan Nova, Inc.: *See*—
King, William D., Jr. 233,272.
Pareja, Ramon: *See*—
Sadler, Harry J., Pareja, and Leschisin. 233,260.
Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Reflective bicycle pedal. 233,223, 10–15–74, Cl. D12—125.
Peasley, Curtiss M. Slide projector. 233,256, 10–15–74, Cl. D61—1.
Petersen, Warren D., to Interlake, Inc. Table. 233,198, 10–15–74, Cl. D6—177.
Phillips Petroleum Co.: *See*—
Fraser, Hugh B., and Roush. 233,268.
Popplewell, Frank W., to Dunlop Ltd. Shuttlecock, 233,246, 10–15–74, Cl. D34—5.
Prochnow, Claus, and W. Steinbock, to Rollei-Werke Franke & Heidecke. Adjustable-head electronic flash unit. 233,258, 10–15–74, Cl. D61—1.
Prochnow, Claus, W. Steinbock, J. Kramer, and H. Schonfeld, to Rollei-Werke Franke & Heidecke. Adjustable-head electronic flash unit. 233,259, 10–15–74, Cl. D61—1.
Procter & Gamble Co., The: *See*—
Blocksom, Durro, Jr. 233,217.
Quandt, Robert S., to Sybron Corp. Laboratory mixer. 233,244, 10–15–74, Cl. D32—2.
Redmer Plastics, Inc.: *See*—
Sanelli, Edward T. 233,214.
Reid, John E., R. J. Cosgrove, and C. D. Mathews, to Chrysler United Kingdom Ltd. Anthropometric model. 233,238, 10–15–74, Cl. D25—1.
Riley, Charles: *See*—
Shearin, Hubert S., and Riley. 233,190.
Rochester Shoe Tree Co., Inc.: *See*—
Smith, Robert C. 233,267.
Rollei-Werke Franke & Heidecks: *See*—
Holtje, Wilfried. 233,257.
Prochnow, Claus, and Steinbock. 233,258.
Prochnow, Claus, Steinbock, Kramer, and Schonfeld. 233,259.
Roush, Gale S.: *See*—
Fraser, Hugh B., and Roush. 233,268.
Rubbermaid Sales Corp.: *See*—
Fry, James C. 233,196.
Molzen, Charles F. 233,207.
Sadler, Harry J., R. Pareja, and J. Leschisin, to Lear Siegler, Inc. Pump. 233,260, 10–15–74, Cl. D65—1.
Sanelli, Edward T., to Redmer Plastics, Inc. Flow control clamp. 233,214, 10–15–74, Cl. D8—229.
Scanbe Mfg. Corp.: *See*—
Welsh, David E. 233,239.

Schmidt, Francis C., to Sorenson Mfg. Co. Plunger switch. 233,240, 10–15–74, Cl. D26—13.
Schonfeld, Hans: *See*—
Prochnow, Claus, Steinbock, Kramer, and Schoenfeld. 233,259.
Self Serv Fixture Co., Inc.: *See*—
Le Fever, Romie L. 233,195.
Semenov, Nikolai I.: *See*—
Vikhlyaev, Alexandr A., Nositkov, Semenov, and Fedulov. 233,211.
Shaffer, Burton: *See*—
Shaffer, Burton, and Morgan. 233,237.
Shaffer, Burton, and A. Morgan, to Hamilton Humidity, Inc. Humidifier reservoir. 233,237, 10–15–74, Cl. D23—146.
Shearin, Hubert S., and C. Riley, to Manual Arts Furniture Co. Adjustable organ bench. 233,190, 10–15–74, Cl. D6—32.
Smajd, Carl F., to Uniroyal, Inc. Pneumatic tire thread and buttress. 233,226, 10–15–74, Cl. D12—149.
Smajd, Carl F., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,227, 10–15–74, Cl. D12—151.
Smith, Robert C., to Rochester Shoe Tree Co., Inc. Shoe display tree. 233,267, 10–15–74, Cl. D86—10.
Sorenson Mfg. Co.: *See*—
Schmidt, Francis C. 233,240.
Steinbock, Werner: *See*—
Prochnow, Claus, and Steinbock. 233,258.
Prochnow, Claus, Steinbock, Kramer, and Schonfeld. 233,259.
Sybron Corp.: *See*—
Quandt, Robert S. 233,244.
Tabata, Kazuo, to Kabushiki Kaisha Tabata a/k/a Tabata Co., Ltd. Swimmer's foot fin. 233,247, 10–15–74, Cl. D34—44.
Tempus, Inc.: *See*—
McTigue, Thomas M. 233,270.
Terraillon, Marc, to Terson S.a.r.L. Steaming and brushing appliance for uncreasing textiles. 233,209, 10–15–74, Cl. D7—164.
Tersch, James R., and W. J. Mattila, to said Mattila assgr. to said Tersch. Water holding tub for sun tanning. 233,262, 10–15–74, Cl. D83—1.
Terson S.a.r.L.: *See*—
Terraillon, Marc. 233,209.
Tomlinson Industries, Inc.: *See*—
Chernak, John A. 233,202.
Turner, Caine, and C. M. Turner. Combined game table and seating unit. 233,191, 10–15–74, Cl. D6—45.
Turner, Connie M.: *See*—
Turner, Caine, and C. M. 233,191.
Uniroyal, Inc.: *See*—
Bierbusse, James H. 233,225.
Mehring, Monte D. 233,228.
Smajd, Carl F. 233,226.
Smajd, Carl F. 233,227.
Utzinger, Diethelm, to Mettler Instruments AG. Electronic weighing scale. 233,252, 10–15–74, Cl. D52—10.
Vikhlyaev, Alexandr A., G. M. Nositkov, N. I. Semenov, and A. I. Fedulov. Pneumatic crushing machine. 232,211, 10–15–74, Cl. D8—67.
Wagner, Lawrence R., and A. A. Henricks. Jiggar. 233,205, 10–15–74, Cl. D7—50.
Walchle, David L., to Xomox Corp. Myringotomy knife. 233,265, 10–15–74, Cl. D83—12.
Wald Mfg. Co., Inc.: *See*—
Humlong, Robert F. 223,224.
Pawsat, Carlton P., and Humlong. 233,223.
Walker Crosweller & Co. Ltd.: *See*—
Arbon, Dennis C. 233,234.
Arbon, Dennis C. 233,235.
Arbon, Dennis C. 233,236.
Wasenko, John K.: *See*—
Finegan, Jack R., and Wasenko. 233,222.
Welsh, David E., to Scanbe Mfg. Corp. Electrical terminal. 233,239, 10–15–74, Cl. D26—1.
White, Gerald E., to Congoleum Industries, Inc. Soft surface floor covering. 233,269, 10–15–74, Cl. D92—4.
Xomox Corp.: *See*—
Geraci, James L., and Walchle. 233,264.
Walchle, David L. 233,265.

CLASSIFICATION OF PATENTS

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CLASS 2
74 3,840,899
77 3,840,900
247 3,840,901
311 3,840,902
338 3,840,903

CLASS 3
1 3,840,904
3,840,905

CLASS 4
112 3,840,906
133 3,840,907
172.19 3,840,908
224 3,840,914

CLASS 5
64 3,840,909
66 3,840,910
68 3,840,911
111 3,840,912
191 3,840,913
261 3,840,915
317R 3,840,924
327R 3,840,916
331 3,840,917
338 3,840,918
343 3,840,919
348WB 3,840,920
3,840,921
350 3,840,922
354 3,840,923

CLASS 6
2R 3,840,925

CLASS 8
21A 3,841,830
21C 3,841,831
116.4 3,841,832
138 3,841,833

CLASS 9
6 3,840,926
8P 3,840,927

CLASS 10
89H 3,840,928

CLASS 12
10.1 3,840,929

CLASS 13
6 3,842,180
22 3,842,181

CLASS 14
71 3,840,930

CLASS 15
21D 3,840,931
167R 3,840,932
236 3,840,933
250.3 3,840,934
322 3,840,935

CLASS 16
76 3,840,936

CLASS 17
1F 3,840,937
11.1R 3,840,938
52 3,840,939
74 3,840,940

CLASS 19
65T 3,840,941
150 3,840,942

CLASS 23
231 3,841,834
253A 3,841,836
253R 3,841,835
258.5 3,841,837
259 3,841,838
284 3,841,840
288E 3,841,844
288F 3,841,839
3,841,841
3,841,842
288S 3,841,843
301SP 3,841,845

CLASS 24
67.9 3,840,943
73R 3,840,944
204 3,840,945
205.1C 3,840,946
261WL 3,840,947

CLASS 27
21 3,840,948

CLASS 28
1R 3,840,949
1.3 3,840,950
43 3,840,951

CLASS 29
6.2 3,840,952
25.15 3,840,953
3,840,954
25.1R 3,840,955
33.5 3,840,956
90R 3,840,957
110 3,840,958
157.1R 3,840,959
182 3,841,846
182.5 3,841,847
3,841,848
200B 3,840,960
200J 3,840,961
203B 3,840,962
203D 3,840,964
203P 3,840,963
208B 3,840,966
208D 3,840,965
213 3,840,967
237 3,840,968
278 3,840,969
406 3,840,970
407 3,840,971
433 3,840,972
434 3,840,973
3,840,974
436 3,840,975
445 3,840,976
460 3,840,977
470.3 3,840,979
493 3,840,978
522 3,840,980
568 3,840,981
578 3,840,982
598 3,840,983
603 3,840,984
611 3,840,985
625 3,840,986

CLASS 30
90.1 3,840,987
180 3,840,988
231 3,840,989
341 3,840,990
383 3,840,991

CLASS 32
40R 3,840,992

CLASS 33
1M 3,840,993
174PC 3,840,994
233 3,840,995

CLASS 34
9 3,840,996
66 3,840,997
105 3,840,999
128 3,840,998
242 3,841,000

CLASS 35
18A 3,841,001
35B 3,841,002

CLASS 36
11.5 3,841,003
72R 3,841,004
76C 3,841,005

CLASS 37
108R 3,841,006
141R 3,841,007

CLASS 38
102.91 3,841,008

CLASS 40
126A 3,841,009
137 3,841,010

CLASS 43
4 3,841,011
26.2 3,841,012
43.15 3,841,013
43.16 3,841,014
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100 3,841,016

CLASS 44
10H 3,841,849
62 3,841,850

CLASS 46
4 3,841,017
12 3,841,018
16 3,841,019
118 3,841,020

CLASS 47
1.2 3,841,021
33 3,841,022
38 3,841,023

CLASS 48
111 3,841,851

CLASS 49
130 3,841,024

CLASS 51
9 3,841,025
71 3,841,026
110 3,841,027
125 3,841,028
128 3,841,029
170PT 3,841,030
249 Re.28,200
283 3,841,031
289R 3,841,033
295 3,841,852
356 3,841,034

CLASS 52
21 3,841,035
27 3,841,032
28 3,841,036
36 3,841,037
80 3,841,038
81 3,841,039
92 3,841,040
169 3,841,041
239 3,841,042
243 3,841,043
395 3,841,045
650 3,841,046
716 3,841,044
720 3,841,047
732 3,841,048
741 3,841,049
745 3,841,050
747 3,841,051
753J 3,841,052

CLASS 53
23 3,841,053
38 3,841,054
198R 3,841,055
331 3,841,056
389 3,841,057

CLASS 55
33 3,841,058
197 3,841,059
220 3,841,060
223 3,841,061
3,841,062
228 3,841,063
269 3,841,064
284 3,841,065
290 3,841,066
300 3,841,067
367 Re.28,201

CLASS 56
1 3,841,068
10.5 3,841,069
14.4 3,841,070
27.5 3,841,071
51 3,841,072
370 3,841,073

CLASS 57
34TT 3,841,074
58.91 3,841,075
83 3,841,076
135 3,841,077
139 3,841,078
140R 3,841,079

CLASS 58
23BA 3,841,080
23R 3,841,081
50R 3,841,082
3,841,083
58 3,841,084
90R 3,841,085
125C 3,841,086
152H 3,841,087

CLASS 59
16 3,841,088

CLASS 60
39.09F 3,841,089
204 3,841,090
224 3,841,091
269 3,841,092
327 3,841,093
339 3,841,094
404 3,841,095
462 3,841,096
517 3,841,097
647 3,841,098
671 3,841,099
690 3,841,100

CLASS 61
14 3,841,101
35 3,841,102
46 3,841,103
48 3,841,104
72.3 3,841,105
3,841,106

CLASS 62
3 3,841,107
236 3,841,108
266 3,841,109
427 3,841,110

CLASS 64
27NM 3,841,111

CLASS 65
12 3,841,853
3,841,854
29 3,841,855
33 3,841,856
94 3,841,857
181 3,841,858
207 3,841,859

CLASS 66
14 3,841,112
95 3,841,113
148 3,841,114
172R 3,841,115

CLASS 68
12R 3,841,116
20 3,841,117

CLASS 70
33 3,841,118
58 3,841,119
395 3,841,120
456R 3,841,121

CLASS 72
6 3,841,122
8 3,841,123
17 3,841,124
21 3,841,125
45 3,841,126
47 3,841,127
60 3,841,128
3,841,129
70 3,841,130
148 3,841,131
163 3,841,132
168 3,841,133
181 3,841,134
227 3,841,135
367 3,841,136
3,841,137
369 3,841,138
420 3,841,139
441 3,841,140
446 3,841,141
448 3,841,142
453 3,841,143

CLASS 73
28 3,841,145
49.2 3,841,146
56 3,841,147
61R 3,841,144
65 3,841,148
71.4 3,841,149
88.5R 3,841,150
117 3,841,151
151 3,841,152
161 3,841,153
170R 3,841,154
190R 3,841,155
291 3,841,156
389 3,841,157
407R 3,841,158
422GC 3,841,160
422R 3,841,159
424 3,841,161
425.4R 3,841,162
432SD 3,841,163

CLASS 74
10.54 3,841,164
56 3,841,165
61 3,841,166
231J 3,841,168
231R 3,841,167
250R 3,841,169
473R 3,841,170
501R 3,841,171
512 3,841,172
751 3,841,173

CLASS 75
.5R 3,841,860
53 3,841,861
71 3,841,862
83 3,841,863
101R 3,841,864
109 3,841,865
124 3,841,866
129 3,841,867
171 3,841,868
206 3,841,869
214 3,841,870

CLASS 76
41 3,841,174
110 3,841,175

CLASS 81
3R 3,841,176
52.4R 3,841,177

CLASS 82
34R 3,841,178
35 3,841,179

CLASS 83
15 3,841,180
50 3,841,181
89 3,841,182
157 3,841,183
346 3,841,184
364 3,841,185
404.2 3,841,186
451 3,841,187
471.3 3,841,188
660 3,841,189
703 3,841,190

CLASS 84
1.01 3,842,184
1.03 3,842,182
1.12 3,842,183
453 3,841,191
485 3,841,192

CLASS 85
9R 3,841,193
13 3,841,194
3,841,195
36 3,841,196

CLASS 89
1.816 3,841,197

CLASS 90
4 3,841,198
13C 3,841,199
15R 3,841,200
24C 3,841,201

CLASS 91
471 3,841,202

CLASS 92
73 3,841,203
86 3,841,204

CLASS 93
93M 3,841,205

CLASS 96
1.6 3,841,871
22 3,841,873
27R 3,841,874
36.1 3,841,875
3,841,876
56 3,841,877
66.3 3,841,878
67 3,841,872
76C 3,841,879
100 3,841,880

CLASS 98
40DL 3,841,206
58 3,841,207
3,841,208
121A 3,841,209

CLASS 99
456 3,841,210
482 3,841,211
571 3,841,212

CLASS 100
4 3,841,213
215 3,841,214

CLASS 101
148 3,841,215
181 3,841,216
413 3,841,217
459 3,841,218

CLASS 102
37.6 3,841,219
70.2R 3,841,220

CLASS 104
17A 3,841,221
17R 3,841,222
23FS 3,841,223
105 3,841,224
130 3,841,225
3,841,226
148SS 3,841,227

CLASS 105
108 3,841,228
221K 3,841,229
3,841,230
221 3,841,231
224R 3,841,232
3,841,233
263 3,841,234
364 3,841,236
368T 3,841,235

CLASS 106
1 3,841,881
50 3,841,882
53 3,841,883
65 3,841,884
93 3,841,885
109 3,841,886
123LC 3,841,887
288Q 3,841,888
289 3,841,889
316 3,841,890

CLASS 108
6 3,841,237

CLASS 110
8C 3,841,239
8R 3,841,240
3,841,241
3,841,242

CLASS 111
85 3,841,243
3,841,244
3,841,245

CLASS 112
77 3,841,246
117 Re.28,204
121.27 3,841,247
254 3,841,248

CLASS 114
.5D 3,841,249
.5R 3,841,250
39 3,841,251
40 3,841,252
74R 3,841,253
3,841,269
77R 3,841,254
206R 3,841,255
227 3,841,256

CLASS 115
35 3,841,257
39 3,841,258

CLASS 116
70 3,841,259
136 3,841,260

CLASS 117
8.5 3,841,891
17.5 3,841,892
37LE 3,841,893
50 3,841,894
72 3,841,895
75 3,841,896
76T 3,841,897
3,841,898
94 3,841,899
102M 3,841,900
105.2 3,841,901
136 3,841,902
138.8F 3,841,903
200 3,841,904
212 3,841,905
228 3,841,906
234 3,841,907

CLASS 118
19 3,841,262
303 3,841,263
505 3,841,261
622 3,841,264
637 3,841,265

CLASS 119
2 3,841,266
5 3,841,267
73 3,841,268

CLASS 122
7R 3,841,270
32 3,841,271
3,841,272
248 3,841,273
356 3,841,274
510 3,841,275

CLASS 123
8.47 3,841,276
32R 3,841,277
41.61 3,841,278
43C 3,841,279
90.39 3,841,280
97B 3,841,281
3,841,282
119R 3,841,283
122A 3,841,284
139E 3,841,285
140R 3,841,286
148E 3,841,287
3,841,288
193CH 3,841,289
195A 3,841,290
198DB 3,841,291

CLASS 124
5 3,841,292
8 3,841,293
16 3,841,294
24R 3,841,295

CLASS 125
11PH 3,841,296
12 3,841,297

CLASS 126
9A 3,841,298
25B 3,841,299
91A 3,841,300
110R 3,841,301
270 3,841,302
343.5A 3,841,303

CLASS 127
5 3,841,908

CLASS 128
1R 3,841,304
1.3 3,841,305
1.5 3,841,306
2G 3,841,307
2M 3,841,308
2.05P 3,841,314
2.05R 3,841,313
2.06E 3,841,312
2.06F 3,841,315
2.1B 3,841,309
2.1E 3,841,310
2.1R 3,841,311
2.1Z 3,841,316
17 3,841,317
20 3,841,318
28 3,841,319
33 3,841,320
36 3,841,321
40 3,841,322
3,841,323
132 3,841,324
151 3,841,325
152 3,841,326
188 3,841,327
218F 3,841,328
220 3,841,329
230 3,841,330
278 3,841,331
283 3,841,332
285 3,841,333
305 3,841,334
317 3,841,335
419P 3,841,336

CLASS 131
21B 3,841,337
235R 3,841,339
261B 3,841,338

CLASS 132
48A 3,841,340

CLASS 133
4 3,841,341

CLASS 134
5 3,841,909
15 3,841,910
37 3,841,911
144 3,841,342

CLASS 135
25 3,841,343

CLASS 136
6FS 3,841,912
107 3,841,913
111 3,841,914
134R 3,841,915
165 3,841,916

CLASS 137
88 3,841,344
106 3,841,345
119 3,841,346
242 3,841,347
494 3,841,348
513.5 3,841,349
516.27 3,841,350
572 3,841,351
614.19 3,841,352
630 3,841,353

CLASS 138
43 3,841,354
89 3,841,355
120 3,841,357
175 3,841,356

CLASS 139
54 3,841,358
370 3,841,359

CLASS 140
1 3,841,360
73 3,841,361

CLASS 141
32 3,841,362
142 3,841,363
286 3,841,364
291 3,841,365
3,841,366

CLASS 144
3R 3,841,367
134R 3,841,368
136R 3,841,369
144.5 3,841,370

CLASS 148
1.5 3,841,917
3,841,918
2 3,841,919
6.35 3,841,920
11.5R 3,841,921
13.2 3,841,922
26 3,841,923
111 3,841,924
113 3,841,925
188 3,841,926
189 3,841,927
190 3,841,928

CLASS 149
17 3,841,929

CLASS 151
21R 3,841,371

CLASS 152
158 Re.28,196
209R 3,841,372
3,841,374
209 3,841,373
355 3,841,375
361R 3,841,376
362CS 3,841,377
362R 3,841,378

CLASS 156
16 3,841,930
18 3,841,931
94 3,841,932
148 3,841,933
157 3,841,934
210 3,841,935
216 3,841,936
286 3,841,937
293 3,841,938
330 3,841,939
367 3,841,940
406 3,841,941
436 3,841,942
494 3,841,943
504 3,841,944
538 3,841,945
566 3,841,946
580 3,841,947

CLASS 157
1.26 3,841,380
1.5 3,841,379

CLASS 159
2R 3,841,381
16R 3,841,382

CLASS 161
23 3,841,948
42 3,841,949
50 3,841,954
55 3,841,950
57 3,841,951
88 3,841,952
150 3,841,953
161 3,841,958
163 3,841,959
186 3,841,957
199 3,841,955
248 3,841,956
251 3,841,960

CLASS 162
29 3,841,961
30 3,841,962
362 3,841,963

CLASS 164
52 3,841,383
60 3,841,384
66 3,841,385
75 3,841,386
81 3,841,387
282 3,841,388
3,841,389
329 3,841,390

CLASS 165
2 3,841,391
22 3,841,392
3,841,393
30 3,841,394
35 3,841,395
44 3,841,396
95 3,841,397
123 3,841,398

CLASS 166
120 3,841,400
247 3,841,401
3,841,402
274 3,841,403
292 3,841,404
294 3,841,405
300 3,841,399
305R 3,841,406
315 3,841,407

CLASS 168
7 3,841,408

CLASS 169
24 3,841,409

CLASS 172
49 3,841,410
111 3,841,411
311 3,841,412
3,841,413
371 3,841,414
439 3,841,415

CLASS 173
31 3,841,416
3,841,417
109 3,841,418

CLASS 174
23R 3,842,185
35CE 3,842,186
38 3,842,187
52R 3,842,188
52S 3,842,189
68.5 3,842,190
88R 3,842,191
120SR 3,842,192
120C 3,842,193

CLASS 175
40 3,841,419
45 3,841,420
212 3,841,421
229 3,841,422

CLASS 176
30 3,841,964
87 3,841,965

CLASS 178
5.8AF 3,842,198
6.6A 3,842,194
6.7A 3,842,197
6.8 3,842,199
7.1 3,842,200
7.5R 3,842,201
7.85 3,842,202

CLASS 179
1AT 3,842,203
1J 3,842,204
3,842,205
2DP 3,842,207
2A 3,842,206
5R 3,842,208
6E 3,842,209
6R 3,842,213
6.3R 3,842,210
15BT 3,842,211
18EA 3,842,214
27D 3,842,215
84L 3,842,216
91R 3,842,212
100.4C 3,842,217
175.25 3,842,219
175.3R 3,842,218
175.31R 3,842,220

CLASS 180
6.3 3,841,423
9.5 3,841,424
53R 3,841,425
64R 3,841,426
65 3,841,238
74 3,841,428
77S 3,841,429
89A 3,841,430
90 3,841,431
91 3,841,432
98 3,841,427
116 3,841,433

CLASS 181
36R 3,841,434
54 3,841,435

CLASS 182
2 3,841,436
16 3,841,437
86 3,841,438

CLASS 184
7D 3,841,439

CLASS 186
1R 3,841,440

CLASS 187
3,841,441
9 3,841,442
29R 3,841,443

CLASS 188
72.3 3,841,444
73.5 3,841,445
3,841,446
77R 3,841,447
218R 3,841,448

CLASS 192
3.59 3,841,449
4C 3,841,450
58B 3,841,451
107R 3,841,452
109A 3,841,453
111R 3,841,454
113B 3,841,455

CLASS 194
1A 3,841,457
1N 3,841,456
32 3,841,458

CLASS 195
2 3,841,966
29 3,841,967
3,841,968
63 3,841,969
3,841,970
3,841,971
107 3,841,972
127 3,841,973

CLASS 197
161 3,841,459

CLASS 198
20R 3,841,460
30 3,841,461
39 3,841,462
109 3,841,463
115 3,841,464
213 3,841,465
221 3,841,468
229 3,841,469
230 3,841,470
289 3,841,471

CLASS 200
52R 3,842,221
61.44 3,842,222
61.58B 3,842,223
81.9R 3,842,224
144AP 3,842,225
148R 3,842,226
150R 3,842,227
151 3,842,228
159R 3,842,229
276 3,842,230
283 3,842,231

CLASS 201
2.5 3,841,974

CLASS 202
139 3,841,975
236 3,841,976
241 3,841,977

CLASS 204
29 3,841,978
38B 3,841,979
43N 3,841,980
55R 3,841,982
146 3,841,983
149 3,841,984
159.16 3,841,985
180P Re.28,203
181 3,841,986
195S 3,841,987
196 3,841,988
212 3,841,989
224R 3,841,990

CLASS 206
205 3,841,466
219 3,841,467
329 3,841,472
338 3,841,473
346 3,841,474
391 3,841,475
427 3,841,476
491 3,841,477
3,841,478
524 3,841,479

CLASS 208
8 3,841,991
11 3,841,992
3,841,993
3,841,994
48Q 3,841,981
3,842,122
89 3,841,995
112 3,841,996

CLASS 209
80.5 3,841,480
310 3,841,481
323 3,841,482

CLASS 210
3 3,841,998
15 3,841,997
17 3,841,999
23 3,842,000
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87 3,841,483
95 3,841,484
104 3,841,485
108 3,841,486
123 3,841,487
168 3,841,488
223 3,841,489
266 3,841,490
321 3,841,491
500 3,841,492

CLASS 212
39 3,841,493
55 3,841,494
125 3,841,495

CLASS 213
43 3,841,496

CLASS 214
1BD 3,841,499
1BT 3,841,497
1QC 3,841,498
6FS 3,841,500
13 3,841,501
17B 3,841,502
75R 3,841,503
78 3,841,504
83.3 3,841,505
86A 3,841,506
92 3,841,507
302 3,841,508
506 3,841,509
516 3,841,510
3,841,511

CLASS 215
7 3,841,512
9 3,841,513
3,841,514

CLASS 219
10.55 3,842,233
10.79 3,842,234
83 3,842,235
121EM 3,842,236
135 3,842,237
137 3,842,238
155 3,842,239
230 3,842,240
311 3,842,241
385 3,842,242
497 3,842,243
513 3,842,232
550 3,842,244

CLASS 220
1.5 3,841,516
3 3,841,515
40R 3,841,517
55K 3,841,518
83 3,841,519
88A 3,841,520

CLASS 221
75 3,841,521
189 3,841,531
265 3,841,522

CLASS 222
2 3,841,523
57 3,841,524
70 3,841,525
79 3,841,526
143 3,841,528
146H 3,841,527
177 3,841,529
189 3,841,530
205 3,841,532
402.13 3,841,533
457 3,841,534
502 3,841,535
503 3,841,536
541 3,841,537
561 3,841,538
3,841,539

CLASS 223
87 3,841,540

CLASS 224
2D 3,841,541
5Z 3,841,542
6 3,841,543
42.03B 3,841,544

CLASS 226
1 3,841,545

CLASS 228
6 3,841,546
29 3,841,547

CLASS 229
40 3,841,548
69 3,841,549

CLASS 232
15 3,841,550

CLASS 235
61.1 3,842,245
61.11E Re.28,198
61.11H 3,842,246
151.21 3,842,249
152 3,842,247
156 3,842,248
175 3,842,250
181 3,842,251
3,842,252

CLASS 236
86 3,841,551
99 3,841,552

CLASS 237
12.3R 3,841,553

CLASS 238
2 3,841,554
10E 3,841,556

CLASS 239
8 3,841,555
11 3,841,557
3,841,558
101 3,841,559
136 3,841,560
189 3,841,561
230 3,841,563
265.29 3,841,562
281 3,841,564
488 3,841,565
568 3,841,566
570 3,841,567
590 3,841,568

CLASS 240
41R 3,842,253
3,842,254
49 3,842,255

CLASS 241
4 3,841,569
78 3,841,570
101.7 3,841,571
202 3,841,572
245 3,841,573

CLASS 242
18DD 3,841,574
25A 3,841,575
55.2 3,841,576
56A 3,841,577
66 3,841,578
67.4 3,841,579
75.2 3,841,580
107.4 3,841,581
199 3,841,582
201 3,841,583

CLASS 243
19 3,841,584

CLASS 244
3.15 3,841,585
17.25 3,841,586
40A 3,841,587
42CC 3,841,588

77F 3,841,589
138R 3,841,590

CLASS 245

1 3,841,591

CLASS 246

258 3,842,256

CLASS 248

101 3,841,592
146 3,841,593
169 3,841,594

CLASS 249

14 3,841,595
20 3,841,596
30 3,841,597
61 3,841,598
205 3,841,599
213 3,841,600

CLASS 250

206 3,842,257
209 3,842,258
213A 3,842,259
221 3,842,260
231SE 3,842,261
3,842,268
239 3,842,262
3,842,263
264 3,842,264
270 3,842,265
288 3,842,266
291 3,842,267
298 3,842,269
301 3,842,270
310 3,842,271
311 3,842,272
324 3,842,273
330 3,842,274
331 3,842,275
336 3,842,276
341 3,842,277
369 3,842,278
397 3,842,279
401 3,842,280
461 3,842,281
468 3,842,282
492 3,842,283
493 3,842,284
497 3,842,285
535 3,842,286

CLASS 251

315 3,841,601
353 3,841,602

CLASS 252

18 3,842,008
25 3,842,009
51.5R 3,842,010
62.51 3,842,011
301.4R 3,842,012
315 3,842,013
447 3,842,014
455R 3,842,015
455Z 3,842,016
3,842,114
474 3,842,017
520 3,842,018

CLASS 254

4R 3,841,603
78 3,842,426
111 3,841,604
127 3,841,605
150R 3,841,606
172 3,841,607
187R 3,841,608

CLASS 256

59 3,841,609

CLASS 259

7 3,841,610
102 3,841,611

CLASS 260

2EP 3,842,019
2.5B 3,842,020
15 3,842,021
17.4SG 3,842,022
23.7H 3,842,023
28 3,842,024
29.7PT 3,842,025
30.8R 3,842,026
31.8R 3,842,027
32.6NA 3,842,028
37N 3,842,029
3,842,030
38 3,842,031
40R 3,842,032
45.75B 3,842,033
45.8N 3,842,034
47CB 3,842,036
47EN 3,842,035
47EP 3,842,037
67UA 3,842,133
67A 3,842,038
69R 3,842,039
75M 3,842,040
3,842,041
75R 3,842,043
77.5AP 3,842,042
78P 3,842,047
78R 3,842,044
3,842,045
3,842,046
3,842,049
78.4D 3,842,050
78.4N Re.28,197
78.5BB 3,842,048
78.5E 3,842,051
80.7R 3,842,052
83.3 3,842,053
86.1N 3,842,054
87.1 3,842,055
92.8W 3,842,056
93.5A 3,842,057
3,842,058
3,842,059
94.9R 3,842,060
112B 3,842,061
112R 3,842,062
112.5 3,842,063
3,842,064
3,842,065
3,842,066
3,842,067
210E 3,842,068
3,842,069
212 3,842,070
233.5 3,842,071
239A 3,842,072
239.3R 3,842,073
239.55C 3,842,074
239.55 3,842,075
240TC 3,842,076
243C 3,842,077
247.1 3,842,090
247.5R 3,842,078
247.7C 3,842,079
256.4F 3,842,080
268TR 3,842,082
268R 3,842,081
281 3,842,083
3,842,084
289R 3,842,085
290H 3,842,086
295N 3,842,087
296R 3,842,089
296T 3,842,088
307D 3,842,099
309 3,842,097
309.2 3,842,098
326N 3,842,094
327M 3,842,096
327S 3,842,095
343.5 3,842,092
345.2 3,842,093
348C 3,842,091
364 3,842,100
372 3,842,101
374 3,842,102
391 3,842,103
397.4 3,842,104
397.45 3,842,105
413 3,842,106
430 3,842,107
3,842,108
448.2B 3,842,112
448.2E 3,842,110
3,842,111
449R 3,842,113
3,842,121
453P 3,842,109
465.5R 3,842,115
468D 3,842,116
3,842,117
3,842,118
468K 3,842,119
471R 3,842,120
490 3,842,123
501.11 3,842,124
514H 3,842,125
539R 3,842,126
566R 3,842,127
593R 3,842,128
594 3,842,129
621H 3,842,130
666PY 3,842,131
669R 3,842,146
675.5 3,842,135
677A 3,842,136
681.5R 3,842,137
683R 3,842,138
683.15B 3,842,134
683.3 3,842,139
683.51 3,842,140
824EP 3,842,141
857PA 3,842,143
862 3,842,142
876R 3,842,144
879 3,842,145
3,842,146
897B 3,842,147

CLASS 261

23A 3,841,612
36A 3,841,613

CLASS 264

24 3,842,148
97 3,842,149
102 3,842,150
203 3,842,151
210R 3,842,152
211 3,842,153
294 3,842,154

CLASS 266

5 3,841,614
15 3,841,615
34T 3,841,616
41 3,841,617

CLASS 267

110 3,841,618

CLASS 269

244 3,841,619

CLASS 270

40 3,841,620
61F 3,841,621

CLASS 271

13 3,841,622
126 3,841,623
180 3,841,624
182 3,841,625
268 3,841,626

CLASS 272

79R 3,841,627

CLASS 273

1B 3,841,630
1R 3,841,628
3,841,629
1.5R 3,841,631
39 3,841,632
54D 3,841,633
95H 3,841,634
106.5A 3,841,635
110 3,841,636
141A 3,841,637
153S 3,841,638
162E 3,841,639
164 3,841,640
3,841,641

CLASS 277

40 3,841,642
57 3,841,643
158 3,841,644

CLASS 279

1A 3,841,645
14 3,841,646
110 3,841,647

CLASS 280

11.37A 3,841,648
16 3,841,649
37 3,841,650
47.16 3,841,651
104.5B 3,841,652
124F 3,841,653
124R 3,841,655
150AB 3,841,654
150SB 3,841,657
3,841,658
3,841,659
150R 3,841,656
179R 3,841,660
3,841,661
414A 3,841,662
475 3,841,663
507 3,841,664

CLASS 281

21 Re.28,202

CLASS 285

2 3,841,665
33 3,841,666
39 3,841,667
93 3,841,668
98 3,841,669
101 3,841,670
133R 3,841,671
175 3,841,672
210 3,841,673

CLASS 290

16 3,842,287

CLASS 292

175 3,841,674
241 3,841,675
256.5 3,841,676
335 3,841,677

CLASS 293

1 3,841,678
63 3,841,679
3,841,680
70 3,841,681
71R 3,841,682
86 3,841,683

CLASS 294

1R 3,841,684
19R 3,841,685
3,841,686
64R 3,841,687
67R 3,841,688
87R 3,841,689

CLASS 296

10 3,841,690
23C 3,841,691
26 3,841,692
35R 3,841,693
3,841,694
43 3,841,695
65R 3,841,696
100 3,841,697
107 3,841,698

CLASS 297

174 3,841,699
219 3,841,700
248 3,841,701
416 3,841,702
445 3,841,703
458 3,841,704

CLASS 299

4 3,841,705
34 3,841,706
84 3,841,707
86 3,841,708
88 3,841,709

CLASS 302

14 3,841,710

CLASS 303

6C 3,841,711
21AF 3,841,712
22R 3,841,713
71 3,841,714

CLASS 305

10 3,841,715
11 3,841,716
3,841,718
25 3,841,717

CLASS 307

10R 3,842,288
88.3 3,842,289
116 3,842,290
228 3,842,310
236 3,842,291
271 3,842,292

CLASS 308

5 3,841,719
9 3,841,720
20 3,841,721
59 3,841,722
187.1 3,841,723
241 3,841,724

CLASS 310

6 3,842,293
9.5 3,842,294
12 3,842,295
15 Re.28,205
41 3,842,296
68C 3,842,297
87 3,842,298
168 3,842,299
216 3,842,300
232 3,842,301
239 3,842,302
260 3,842,303

CLASS 312

107 3,841,725
111 3,841,726
3,841,727
140.2 3,841,728

CLASS 313

44 3,842,304
60 3,842,305
116 3,842,306
184 3,842,307
188 3,842,308
346DC 3,842,309

CLASS 315

27TD 3,842,311
30 3,842,312
169TV 3,842,313
3,842,314

CLASS 317

3 3,842,315
5 3,842,316
33SC 3,842,317
62 3,842,318
98 3,842,319
99 3,842,320
103 3,842,321
119 3,842,322
141S 3,842,323
146 3,842,324
230 3,842,325

CLASS 318

7 3,842,326
221E 3,842,327
249 3,842,328
372 3,842,329
574 3,842,330
685 3,842,331
696 3,842,332

CLASS 320

2 3,842,333

CLASS 321

3,842,334
13 3,842,335
27R 3,842,336
3,842,337
43 3,842,338
44 3,842,339
45C 3,842,341
45R 3,842,340

CLASS 323

124 3,842,342

CLASS 324

21 3,842,343
54 3,842,344
71R 3,842,345
73R 3,842,346
78D 3,842,347
94 3,842,348
98 3,842,349
109 3,842,353

CLASS 325

4 3,842,350
38B 3,842,351
56 3,842,352

CLASS 328

14 3,842,354
114 3,842,355
150 3,842,356
188 3,842,357

CLASS 329

129 3,842,358

CLASS 330

4.9 3,842,359
3,842,360
56 3,842,361
103 3,842,362

CLASS 33[illegible]

94.5G 3,84[illegible],363
94.5 3,842,364
3,842,[illegible]55
3,842,366
3,842,367
3,842,368
3,842,369
101 3,842,370
143 3,842,371

CLASS 332

7.51 3,842,372

CLASS 333

31R 3,842,373
79 3,842,374

CLASS 335

164 3,842,375
202 3,842,376
207 3,842,377
220 3,842,378
297 3,842,379

CLASS 337

6 3,842,380
7 3,842,381
107 3,842,382
151 3,842,383
171 3,842,384

CLASS 338

32R 3,842,385

CLASS 339

4 3,842,386
14R 3,842,390
26 3,842,387
32R 3,842,391
47R 3,842,392
59R 3,842,388
60M 3,842,389
3,842,393
75R 3,842,394
91R 3,842,395
217S 3,842,396

CLASS 340

1R 3,842,397
5S 3,842,398
146.1AB 3,842,401
146.1AQ 3,842,400
146.1BA 3,842,399
146.3S 3,842,402
170 3,842,403
172.5 3,842,404
3,842,405
173R 3,842,406
174TF 3,842,407
216 3,842,408
228.1 3,842,409
274 3,842,410
332 3,842,411
347AD 3,842,413
3,842,415
347DA 3,842,412
347DD 3,842,414
347NT 3,842,416

CLASS 343

5SA 3,842,418
5R 3,842,417
112D 3,842,419
117R 3,842,420
909 3,842,421

CLASS 346

1 3,842,422

CLASS 350

3.5 3,841,729
5 3,841,730
96WG 3,841,731
160R Re.28,199
3,841,732
3,841,733
166 3,841,734
187 3,841,735
214 3,841,736
288 3,841,737
293 3,841,738
320 3,841,739

CLASS 351

44 3,841,740
120 3,841,741

CLASS 352

91 3,841,742
198 3,841,743

CLASS 353

15 3,841,744
3,841,746
26 3,841,745
27 3,841,747
83 3,841,748
117 3,841,749

CLASS 354

29 3,842,423
31 3,842,424
51 3,842,425
135 3,842,427
145 3,842,428
187 3,842,430
250 3,842,429
287 3,842,431

CLASS 355

3R 3,841,750
4 3,841,751
3,841,752
8 3,841,753
17 3,841,754

CLASS 356

28 3,841,755
72 3,841,756
85 3,841,757
106LR 3,841,758
121 3,841,759
124 3,841,760
200 3,841,761
203 3,841,762
207 3,841,763
241 3,841,764
246 3,841,765
256 3,841,766

CLASS 358

12 3,842,196
75 3,842,195

CLASS 360

105 3,842,432
3,842,433

CLASS 402

61 3,841,767

CLASS 403

3 3,841,768
90 3,841,769
106 3,841,770
163 3,841,771
224 3,841,772
341 3,841,773
358 3,841,774

CLASS 404

11 3,841,775
41 3,841,776
84 3,841,777
105 3,841,778
111 3,841,779

CLASS 408

1 3,841,780
35 3,841,781
50 3,841,782
3,841,783
3,841,784
197 3,841,785

CLASS 415

114 3,841,786
136 3,841,787
147 3,841,788
148 3,841,789
159 3,841,790
170A 3,841,791
172 3,841,792

CLASS 416

221 3,841,794

CLASS 417

45 3,841,793
216 3,841,795
274 3,841,796
323 3,841,797
419 3,841,798
477 3,841,799

CLASS 418

61B 3,841,800
3,841,801
66 3,841,802
84 3,841,803
131 3,841,804
178 3,841,805
195 3,841,806

CLASS 423

15 3,842,155
188 3,842,157
213.5 3,842,158
3,842,159
242 3,842,160
339 3,842,161
386 3,842,162
448 3,842,165
466 3,842,156
496 3,842,163
579 3,842,164

CLASS 424

9 3,842,166
49 3,842,167
52 3,842,168
232 3,842,169
234 3,842,170
245 3,842,171
263 3,842,172
3,842,173
270 3,842,174
273 3,842,175
3,842,176
274 3,842,177
283 3,842,178
330 3,842,179

CLASS 425

104 3,841,807
110 3,841,808
3,841,809
113 3,841,810
115 3,841,811
149 3,841,812
159 3,841,813
208 3,841,814
290 3,841,815
326R 3,841,816
331 3,841,817
376 3,841,818
388 3,841,819
3,841,820
434 3,841,821
440 3,841,822
450.1 3,841,823

CLASS 431

8 3,841,824
66 3,841,825

CLASS 432

2 3,841,826
60 3,841,827
222 3,841,828
245 3,841,829

CLASSIFICATION OF PLANTS

P. — 11 3,640
P. — 29 3,639
P. — 34 3,637
P. — 68 3,638
P. — 3,641
P. — 3,642
P. — 88 3,643

CLASSIFICATION OF DESIGNS

D2— 208 233,186
276 233,187
233,188
405 233,189
D6— 32 233,190
45 233,191
63 233,192
69 233,193
71 233,194
85 233,195
233,196
95 233,197
177 233,198
183 233,199
201 233,200
D7— 21 233,201
233,202
46 233,203
47 233,204
50 233,205
61 233,206
107 233,208
163 233,207
164 233,209
194 233,210
D8— 67 233,211
96 233,212
187 233,213
229 233,214
264 233,215
D9— 111 233,216
147 233,217
219 233,218
D10— 83 233,219
D12— 22 233,220
55 233,221
91 233,222
125 233,223
233,224
146 233,225
149 233,226
151 233,227
233,228
162 233,229
D13— 1M 233,230
D19— 78 233,231
D22— 1 233,232
D23— 2 233,233
20 233,234
23 233,235
233,236
146 233,237
D25— 1R 233,238
D26— E 233,239
13R 233,240
233,241
D29— 23A 233,242
233,243
D32— 2 233,244
D34— 5SH 233,246
SS 233,245
44 233,247
D45— 17 233,248
D48— 20A 233,249
24R 233,250
233,251
D52— 10 233,252
D55— 1E 233,253
F 233,254
D61— 233,257
233,258
233,259
J 233,256
N 233,255
D65— R 233,260
D74— C 233,261
D83— 233,262
233,263
12A 233,264
R 233,265
D86— 8 233,266
10D 233,267
D87— 1R 233,268
D92— 4 233,269
D94— 3A 233,271
B 233,270
D96— 12J 233,272
R 233,273
13 233,274

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

3,842,411	3,841,322	3,842,228	3,841,745	3,841,896	3,841,478
1 : 3,840,955	3,841,323	3,842,246	3,841,761	3,842,170	3,841,479
3,841,379	3,841,326	3,842,248	3,841,790	3,842,260	3,841,506
3,841,585	3,841,344	3,842,251	3,841,794	3,842,278	3,841,512
2 : 3,840,970	3,841,349	3,842,272	3,841,828	15 : 3,841,299	3,841,518
3,841,011	3,841,417	3,842,281	3,841,921	16 : 3,841,945	3,841,530
3,841,612	3,841,449	3,842,284	3,841,976	3,841,997	3,841,539
4 : 3,840,900	3,841,461	3,842,289	3,842,013	17 : Re.28,205	3,841,544
3,841,036	3,841,483	3,842,292	3,842,172	3,840,899	3,841,571
3,841,168	3,841,520	3,842,312	3,842,386	3,840,906	3,841,594
3,841,181	3,841,524	3,842,316	10 : 3,841,078	3,840,915	3,841,608
3,841,268	3,841,540	3,842,326	3,841,401	3,840,951	3,841,622
3,841,427	3,841,541	3,842,347	3,841,860	3,840,956	3,841,629
3,841,604	3,841,546	3,842,370	3,841,951	3,840,979	3,841,636
3,841,640	3,841,547	3,842,373	3,841,958	3,840,989	3,841,641
3,841,651	3,841,558	3,842,382	3,842,062	3,841,022	3,841,650
3,841,716	3,841,576	3,842,385	12 : 3,840,916	3,841,028	3,841,667
3,841,741	3,841,607	3,842,395	3,841,014	3,841,042	3,841,684
3,841,778	3,841,628	3,842,414	3,841,080	3,841,048	3,841,715
3,842,346	3,841,631	3,842,417	3,841,116	3,841,094	3,841,718
6 : Re.28,202	3,841,644	3,842,418	3,841,195	3,841,103	3,841,771
3,840,901	3,841,660	3,842,421	3,841,196	3,841,109	3,841,795
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3,840,925	3,841,710	8 : 3,840,968	3,841,320	3,841,140	3,841,809
3,840,927	3,841,734	3,841,119	3,841,325	3,841,165	3,841,838
3,840,960	3,841,746	3,841,269	3,841,334	3,841,166	3,841,868
3,840,976	3,841,763	3,841,339	3,841,513	3,841,178	3,841,875
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3,841,068	3,841,884	3,841,932	3,841,740	3,841,231	3,842,059
3,841,098	3,841,885	3,841,992	3,841,772	3,841,240	3,842,068
3,841,100	3,841,886	9 : Re.28,199	3,841,916	3,841,253	3,842,069
3,841,120	3,841,892	3,840,911	3,842,028	3,841,257	3,842,095
3,841,154	3,841,900	3,840,959	3,842,135	3,841,274	3,842,097
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3,841,192	3,842,007	3,841,015	3,842,244	3,841,345	3,842,239
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3,841,226	3,842,079	3,841,202	13 : 3,840,969	3,841,371	3,842,277
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DESIGN PATENTS

6 : 233,191
233,208
233,239
233,272
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12 : 233,186
17 : 233,198
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PLANT PATENTS

17 : 3,641
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18 : 3,639
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